



S36A

**THE BULLETIN
OF
THE AMATEUR
ENTOMOLOGISTS'
SOCIETY**

VOLUME 23

1964



**Edited by
H. V. DANKS**



**The Amateur Entomologists' Society
42 Normandy Avenue, Barnet, Herts**

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FEBRUARY, 1964



**THE BULLETIN
OF
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EDITED by H. V. DANKS



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EDITORIAL

I must first thank those Members who have contributed articles for the *Bulletin* as a result of my appeals in the August and November issues. I have been particularly pleased with the response from Junior Members and, especially in view of certain comments in the following pages, I find this most encouraging. The response to my appeals for copy, in fact, has been such that I have actually been able to 'carry over' a small surplus of material for the May number: if this rate of accumulation of material is maintained — 'closing date' for May issue copy being 1st March, as the present thirty-six page *Bulletins* take a rather long time to print—it should prove possible from now on to produce full-sized *Bulletins* on time.

I must apologise to any Member who submitted an article during the hectic few months while the August and November issues were being prepared and who might not have received proper acknowledgement from me for his effort. However, I am now in a position to be able to deal relatively quickly with any correspondence.

In this issue will be found a few notes for the guidance of intending authors, and these include some changes from earlier notes on these lines—I hope that Members will assist me by reading through them, noting particularly item (21).

From time to time appeals for information or assistance on particular entomological topics are published in the *Bulletin* and in the *Wants and Exchanges List*. I should

like to think that our Society is active in facilitating exchanges of information, etc., between entomologists, and I make a general plea here that anyone who has information of the nature required by the author of such an appeal should make the effort to send it to that author. Rothamsted Experimental Station, for instance, performs a very valuable service in correlating certain entomological data, but this service is dependent on the small individual efforts of amateur entomologists in sending in information. The appeals in *Bull. amat. Ent. Soc.*, 21: 108 and 22: 81-3 produced a small response, yet there are certainly many more entomologists who could supply the sort of data required if only they would make the slight effort required to pass these data on to the Rothamsted entomologists, who are very grateful to the amateurs on whose records they depend. General migration records, of course, are always wanted, as well as the information requested in the special appeals which have appeared.

Other Members, too, perform services to entomology in the same way as the workers at Rothamsted, and here too there is scope for friendly co-operation between Members. Why not read through the back numbers of the *Bulletin* and see if you have any information which might possibly assist another Member?

Finally, could I just draw your attention to the fact that subscriptions for 1964 are now due, and that prompt payment of these will greatly assist the Society, as the preparation and despatch of reminders each year to Members who forget to pay involves much extra work for the Society's officers.

H. V. Danks (2907).

ANNUAL GENERAL MEETING

The Annual General Meeting for 1964 will be held at the rooms of the Linnean Society, Burlington House, Piccadilly, London W.1, on the afternoon of Saturday March 31st.

The programme will begin at 2.30 p.m., and will include a talk — "The Butterflies of Southern France" — by Mr P. W. Cribb, who will show a series of colour slides.

It is hoped that all Members will take advantage of the opportunity provided by the A. G. M., both to meet their fellow Members and to play their part in the administration of the Society.

A full notice of the programme and agenda of the A. G. M. will be circulated to Members before the meeting.

H.V.D.

EXCHANGE OF FOREIGN INSECTS

Kuninobua Aonuma, 729, Nakagoshi, Nagano City, Nagano Ken, Japan, would like to exchange insects with entomologists in this country, and it is hoped that the publication of this note (extracted from his letter to the British Museum (Natural History)) will prompt AES Members to write to him.

He can offer Japanese and some Formosan Lepidoptera, Carabidae, Lucanidae, Scarabaeidae, Geotrupidae, Cerambycidae, etc., and livestock (e.g. pupae of Papilionidae in winter, eggs of Lycaenidae, etc.). He would like to obtain British Lepidoptera, Carabidae, Cerambycidae, and books on insects.

H.V.D.

COLOUR SLIDES

As the President indicated in the May 1963 issue of the *Bulletin* (*Bull. amat. Ent. Soc.*, 22 : 35), the Society is starting a collection of colour slides, for use at lectures organised by the Society or any of its Members. We have been fortunate to receive from Miss Christine McDermott (2488), a generous gift of slides, which has given us the basis of such a collection.

It is hoped that a really extensive set of transparencies can be built up, and any natural history slides which Members no longer require and which might be of use to the Society would be welcomed by the Hon. General Secretary. As soon as the collection has become of a reasonably comprehensive nature, details of the material available for loan will be published in the *Bulletin*.

H.V.D.

GUIDANCE FOR AUTHORS

The following notes outline the most important of the methods which are used by the Editor to ensure that there is a tidy uniformity in the way in which material is published in the *Bulletin*, and they also indicate how the Editor would prefer articles to be presented so that these are relatively easy to deal with. By carrying out the requests below, therefore, you will greatly help the Editor, although material from Members who feel that they cannot carry out the ideas contained in these notes is still gratefully received. It is, however, very much appreciated if Members act on the information given and so lighten the Editor's task.

If any Member would like information on specific matters concerned with writing articles for the *Bulletin* and not given in these notes, the Editor will be pleased to help in any way he can.

(1) If possible, please submit material which is typewritten. Please try to have this double-spaced (i.e., with a whole line empty between successive lines of type), with very wide margins and on *one side only* of quarto paper. If handwritten material is submitted, please ensure that there is again plenty of space between the lines and that the writing is clear. It is a good idea to have somebody else read your manuscript, as ambiguities are often shown up in this way.

(2) The title should be in capital letters throughout and *not* underlined. When choosing a title, always think how it will appear on the *Bulletin* page (is it too long?) and whether reference to the subject matter will be *easy* when the title has been carried into the index.

(3) The author's (authors') name(s), followed by AES Membership Number(s) in parentheses, should be placed at the end of the article, on the right hand side, on a different line from the text, and *not* underlined.

(4) The date of writing should be placed on the left opposite the author's name, in the usual (shortest) form (e.g., 1. 2. 64.).

(5) *All* species of living things, where exactly identified, should be named with their full scientific names, i.e., full name of genus with capital initial letter, specific name with small initial letter, both of these names underlined; name of author, *not* underlined but conventionally abbreviated if well-known (note that Linn. and Fab. are used for Linnaeus and Fabricius respectively, *not* L. and F.).

(6) If there is a well-known English name, this should be added in parentheses after the scientific name, each word of the former having a capital initial letter, e.g., *Pieris brassicae* Linn. (Large White Butterfly). "The Large White Butterfly (*Pieris brassicae* Linn.)" is also permissible.

(7) If you do not know any item of

this information, please leave a good-sized space where it should occur, so that the Editor can fill it in for you. (Make sure, of course, that you have supplied enough information for him to be able to identify the species to which you are referring!)

(8) Once you have given the full names of a species you may, if you wish, refer to it later in the same article by its English name alone or by its scientific name alone. If the latter you may, if no ambiguity can possibly arise by doing so, omit the author's name and/or abbreviate the generic name to its initial letter followed by a full point (.).

(9) If the name of a genus is used on its own it should be underlined, and if it is followed by 'sp.' (singular) or 'spp.' (plural) meaning 'species', this should *not* be underlined, e.g., *Pieris* sp.

(10) The scientific names of groups above the rank of genus should have capital initial letters but *not* be underlined. Adjectives formed from one of these names (e.g., coleopterous), or nouns derived similarly and referring to students of the group concerned (e.g., coleopterist) should, however, have small initial letters. If, however, an adjective derived in this way (as in "a cerambycid beetle") is used as a noun ("a Cerambycid") it should be given a capital initial letter.

(11) English vernacular words which do not apply to any particular species of animal or plant (e.g., grass, butterfly, rose, etc.) should be given small initial letters.

(12) Abbreviations should be followed by a full point (.) *only* if the last letter of the word is missing. Thus Linn. should be used for Linnaeus, but Mr for Mister. The abbreviation AES will be treated as a cipher, with the points omitted.

(13) References to articles in the *Bulletin* should be indicated by the World List abbreviation (*Bull. amat.*

Ent. Soc.) underlined, followed by a comma, then the number of the volume, a full colon (:), and the number(s) of the page(s) occupied by the article(s). Indication of the bold type used for the volume numbers should be left to the Editor. Examples: *Bull. amat. Ent. Soc.*, 23 : 1. *Bull. amat. Ent. Soc.*, 23 : 1, 3-4, and 14-15. *Bull. amat. Ent. Soc.*, 22 : 69-70 ; 23 : 1.

(14) Where reference to an issue of the *Bulletin* is necessary (and no more exact reference is possible) this should be made by giving first the number of the volume and then the number of the issue concerned, the latter being placed in parentheses, e.g., *Bull. amat. Ent. Soc.*, 23 (262).

(15) A reference, in the text of an article, to a book or paper, should be made by giving the author, and then the date in parentheses, of the paper. The full details of the paper should be given at the end of the article (under the heading, in capital letters, 'reference(s)') and should take the form exemplified below :

FORD, E. B. (1955). *Moths*. New Naturalist Series. Collins, London.
YARROW, I. H. H. (1955). *Entomologist*, 87 : 5-9. Some Ways of Distinguishing between the Two Common Wasps *Vespula germanica* Fab. and *Vespula vulgaris* Linn.

Further examples can be found in the following pages.

(16) Strict rules of grammar will be applied to material before publication, e.g., every sentence must have a finite verb ; ambiguities (as of the subjects of subordinate clauses) will be removed.

(17) Some of the above notes may not be applied if a contribution is considered to be primarily of a 'literary', rather than of a factual, nature.

(18) Please count the actual number of words in your contribution and write this in pencil, and ringed round, in the top right hand corner of the

first sheet of each article.

(19) If illustrations are required to clarify the article, and you feel like submitting your own drawings for publication, these should be twice as big, in both height and width, as they are to be printed, and must be drawn clearly in *black Indian ink* on white Bristol board, which may be obtained from any good stationer. Otherwise they will not reproduce properly, and printing blocks are expensive! (Don't forget that any writing will come out half-size too.) If you feel unable to make your own drawings for publication, send the best you can and we shall forward them to one of several Members who have very kindly offered their services as artists.

(20) Major or factual alterations which appear to be necessary will be agreed with authors before material is sent to the printer. However, the above notes will be used automatically to make any minor changes necessary to render articles suitable for publication in the *Bulletin*.

(21) In order to save the Society unnecessary expense, proofs will not be sent to authors unless they are requested.

(22) Please read through your finished article and check that you are prepared to see its contents published over your name in the *Bulletin*, as later alterations or additions are likely to prove very expensive.

H. V. Danks (2907), *Bulletin* Editor.

ANNUAL EXHIBITION — 5th OCTOBER 1963

A pleasant morning encouraged a large gathering of Members and friends to attend the Annual Exhibition at the Hugh Myddelton Secondary School, London E.C.1. This was particularly pleasing, as our printer had concentrated his efforts on

bringing the *Bulletin* up to date but in the process the advertisements and notices for the Exhibition had been curtailed.

Besides the usual 'type' collections, several detailed locality reviews were of special interest and exhibits of live material were most attractive. It was rather surprising that after the coldest winter in living memory, followed by a very late spring and dull summer, there was little accent on unusual dates of appearance or on the general effect of the extraordinary weather on insect life. Possibly this information will become available later in the year.

I feel that Members who have not visited an Exhibition cannot be aware of the comprehensive coverage, of all entomological requirements, provided by the dealers, fifteen of whom were represented. A surprising feature of this commercial age is the virtual disappearance of naturalists' shops from the large towns, to be replaced by a relatively small number in the provinces providing a mainly postal service. Here, in one hall, was displayed a complete range of new and second-hand books, of equipment and of living and set British and exotic insects.

As usual, the tables reserved for the disposal of Members' surplus material were very popular, and our publications were well displayed. Mr T. S. Robertson performed the difficult task of demonstrating the setting of Lepidoptera, to a large and appreciative audience, and Mr B. O. C. Gardiner, whose exhibit of live butterflies was so effective, gave a most informative talk on the genetics of the various races of *Pieris brassicae* Linn. (Large White Butterfly). Good parking facilities for cars, sufficient seating, and a refreshment buffet added to the general amenities. Lastly, the Council would like to express their appreciation to Mr B. F. Skinner and all helpers for the

organisation of another very successful Exhibition.

Continuing our practice of previous years, we made a brief review of exhibits. It was disappointing, however, that a number of items were apparently exhibited anonymously.

Ashdown, P. D. A. (2823J)

A collection of Coleoptera.

Bizley, D. O. (2860J)

A detailed study of the butterflies of the Leatherhead area, illustrated with photographs and set specimens.

Bradford, E. S. (3068)

Microlepidoptera, and colour photographs of insects.

Bruce, C. (1746)

A selection of Lepidoptera taken in Kent, Sussex and Norfolk in 1963.

Button, R. D. (3233J)

Insects and other groups from Yugoslavia and the British Isles.

Castle, M. E. (2490)

Transit packs (especially useful for transit by air-mail). Breeding-cages, initially designed for mygal [American bird-eating] spiders, with typical specimens of these spiders from California. Also jellied sugaring-mixture, intended to lessen wastage when used on absorbent surfaces.

Coleridge, W. L. (2194)

A selection of insects taken during a trip to the southern Alps.

Cooter, J. (3290J)

Coleoptera from Sussex.

Cowell, T. (3593J)

The more common noctuid larvae feeding in late autumn.

Cribb, H. J. (2044)

Coleoptera and other orders of insects collected in southern France.

Cribb, P. W. (2270)

A comprehensive collection of butterflies, made during visits to southern France.

Department of Scientific and Industrial Research

A wide range of insects occurring as economic pests in the British Isles, with examples of damaged commodities.

Dillon, T. J. (2665) and Skinner, B.F. (2470)

Local species of Lepidoptera taken in 1963 from north Devon and Cornwall.

Dodwell, D. E. (3482)

Lepidoptera from the Yeovil district. Also varieties of British butterflies, and of the continental Camberwell Beauty (*Nymphalis antiopa* Linn.).

Ford, M. L. (3031J)

A survey of the Lepidoptera of Lavington Park, Sussex, illustrated with maps and specimens.

Freebrey, A. M. (3359)

A striking display of the large tropical birdwing butterflies (*Troides* spp.).

Gardiner, B. O. C. (225)

A large muslin display cage containing living Milkweed Butterflies (*Danaus plexippus* Linn.) and Large White Butterflies (*Pieris brassicae* Linn. race *cheiranthi* Huebn., and double-recessive aberration *coerula-albinensis* Gardiner), with set series to illustrate the genetics. Also a fine display of set silkmoths (Saturniidae).

Harman, A. J. E. (2721)

Coleoptera collected in Spain and Jugoslavia.

Harrison-Gray, M. (1806)

A representative collection of bred silkmoths.

Hilliard, R. D. (99)

The British species of pyralid moths (Pyralidae, subfamily Pyraustinae).

Hodgson, D.

Examples of British and exotic lepidopterous larvae.

Hough, M. J. (3354J)

Lepidoptera noted at a mercury-vapour light-trap in the Harrow district during 1963.

Jarman, R. A. (2706)

Large-size photographic studies of larvae of British Lepidoptera.

Keen, D. H. R. (3309)

A collection of British dragonflies (Odonata).

King, Ian

Selected examples of British Lepidoptera and Odonata.

McGeeney, A. P. (3283J)

Typical butterflies from Nyasaland.

McCormick, R. F. (3375)

Pupae of British Lepidoptera to illustrate the range of form. Also Lepidoptera taken in 1963.

Myall, M. G. (3503)

A technique of insect photography. Photographs were taken with an Asahi Pentax S. V. single-lens reflex camera, with extension tubes, on F.P.3 film. Film was developed in 'Microphen'.

Ollevant, D. (1514)

Smaller moths ('Microlepidoptera') of the London area.

Osborne, R. J. (2437J)

Larvae of the American Virgin Tiger Moth (*Apantesis virgo* Linn.), and the British Garden Tiger Moth (*Arctia caja* Linn.) for comparison.

Osland, R. C. (3459J)

A collection of Indian hawk-moths (Sphingidae).

Plester, L. S. (2968) and Gould, W. H. P. (2464)

Butterflies taken during an expedition across France into Corsica, from July to September 1962.

Pope, W. W. (3299), Corke, D. (2962J) and Scott, D. R. (Essex Field Club)

Colour transparencies of insects and a detailed study of the green form of the larva of the Elephant Hawk-moth (*Deilephila elpenor* Linn.).

Robertson, T. S. (2417) and Robertson, A. S.

Variation in British Lepidoptera, and types of butterfly larvae.

Robinson, R. (3201)

Specimens and charts to illustrate the breeding of varieties of the Garden Tiger Moth (*Arctia caja* Linn.). Also information about the latest AES Study Group—Lepidoptera Genetics: enquiries to 12 The Crossway, Ealing, London W.13.

Rothamsted Experimental Station,

Harpenden

The Station's new suction trap was shewn. This was designed to be used on the ground or in the air. Using no light but only fans, air is drawn through filters which retain all insects, etc. Up to 60,000 cu. ft of air can be filtered in one night, with the special advantage that—unlike the light trap—this apparatus only catches the resident species and not those attracted from neighbouring localities.

The initial work using the suction trap was carried out on aphids. Air currents carry the aphids upwards in the daytime, often to a height of several thousand feet (where the density may amount to millions of specimens over a few square miles), and return them to ground level in the evening.

Also a new type of covered horizontal light-trap with a flat top, and using only normal household light bulbs. The light was superior to mercury-vapour light for attracting some families of insects, the trap was cheaper to equip, and the catch was protected from the weather.

St Ivo Entomology and Natural History Society (2941A)

A veritable exhibition by itself of living creatures of many orders, housed and shewn with great ingenuity. Not least of interest was the enthusiasm of the large band of scholars who handled their captives with such confidence.

Skinner, B. F. (2470)

Lepidoptera taken in 1963, including a unique banded specimen of the Swallowtailed Moth (*Ourapteryx sambucaria* Linn.)

Smith, Arthur

A preview of the drawings showing the larval feeding habits of the British Tortricids, prepared for the coming Ray Society publication. Also large-scale paintings and illustrations of insects.

Smith, A. E. (2136)

'Collecting round the World in the R.A.F.'—a collection of butter-

flies made from the many countries visited during a Service career.

Taylor, P. G. (3571)

Variation in the Camberwell Beauty Butterfly (*Nymphalis antiopa* Linn.). Also a method of making insect setting-boards and a case to house these.

Uffen, R. W. J. (1660)

Colour prints of *Coleophora tricolor* Walsingham from Norfolk, and of endemic spiders from Madeira.

Watkinson, I. A. (3130J)

Long series of the Peppered Moth (*Biston betularia* Linn.), to illustrate the various forms.

Wright, L. A. (3434J)

Types of all Lepidoptera taken in 1963.

Zoological Gardens

By courtesy of the London Zoological Gardens, G. J. Ashby (2252), curator of the Insect House, showed an interesting selection of living insects and representatives of many other groups and, as usual, answered the many queries presented to him.

R. D. Hilliard (99).

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REPORTS OF THE COUNCIL FOR NATURE

Extracts from the Monthly Press Bulletin, No. 43, September 1963, published by the Intelligence Unit of the Council For Nature, read :

"CROP-SPRAYING KILLS BEES

The Lincolnshire County Beekeepers' Association fears that honey yields will be affected if farmers do not take more care with their crop-spraying, which is killing off hundreds of thousands of bees in the county. Already bees have had to be imported from the United States to replace those killed off in the hard winter."

"SUSSEX NATURE RESERVE"

The owners of the sole site in Britain of the Lewes Wave Moth (*Scopula immorata* [Linn.]) are to make more land available to the Sussex Naturalists' Trust to enlarge the existing small reserve, which has been managed under the auspices of the Royal Entomological Society. The Trust will endeavour to maintain the essential grass-heath conditions by controlling the scrub."

D. E. Dodwell (3482),
12.9.63. *Hon. General Secretary.*



COLLECTING NOTES — Spring, 1964

The Smaller Moths

Mr Bradford's notes on *Fumea casta* Pallas are: "forewings and hindwings blackish brown, uniform in colour all over. Head, thorax and body darker black. The larva feeds on grasses and makes a case of bits of grass spun together". I have found the larva feeding on Yorkshire Fog Grass (*Holcus lanatus* Linn.).

F. casta is one of the Psychidae, a family the members of which are quite distinct from other Lepidoptera. Most of the females are apterous and some are parthenogenetic. The larvae live in portable cases and are known in other countries as 'bag-worms'. *F. casta* is quite a common moth and the larva is mostly seen in May, when it leaves its foodplant to crawl up the nearest tree, fence or wall in order to pupate within the larval case. This case consists of longitudinally placed pieces of grass, and these are splayed out at the posterior end of the case. If cases are found with the straw-like pieces constricted at the posterior end then the larvae within are almost certain to be those of the more local species *Epichnopteryx pulla* Esp. I have found larvae of *E. pulla* on grass which was

growing in the shelter of Gorse bushes (*Ulex* spp.).

On *Tinea pallescentella* Staint. Mr Bradford writes: "Head yellowish-orange. Forewings dark bronzy brown with a conspicuous pale dot near middle. Hindwings brown grey. The larva feeds on grain, skins, feathers, wool, etc. I have bred specimens from the same chair as *Tinea pellionella* Linn. both feeding on horse-hair and sacking or hessian. The imago can be found from June to October". I have also taken it in May. Meyrick (1928) gives this moth as 'local'.

Spring can be a very busy time and the beginner has to take care that he doesn't collect too much, and so lose larvae through neglect or lose moths through having too many to set at once. Almost any container can be used for rearing leaf-eating larvae providing that it provides the right humidity. I find small plastic boxes suitable, as anything larger than is necessary would make the search for the larvae more difficult when changing foodplant.

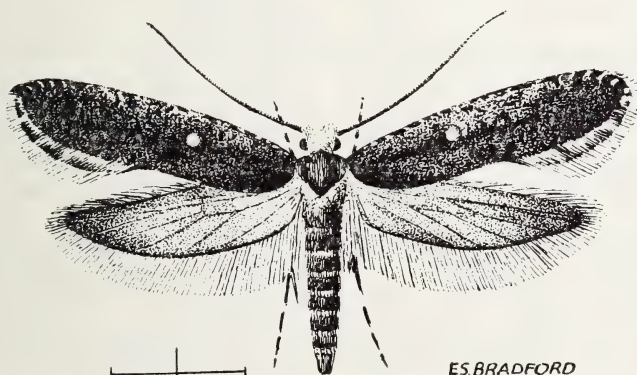
In early spring the beginner with the net should visit oak (*Quercus* spp.) woods for *Tortricodes tortricella* Huebn., which flies during the day-time, and later in the year any woods may be visited to examine the tree-trunks for such moths as *Diurnea fagella* Schiff., *Pammene argyrana* Huebn., and *Mnemonica subpurpurella* Haw.

During May (and in July and August) almost every Gorse bush has imagines of *Laspeyresia succedana* Schiff. flying around it.

In May and June the chalk downs may be visited for such species as *Pyrausta purpuralis* Linn., *P. aurata* Scop., *P. cespitalis* Schiff., and *Pancalia leuvenhoeckella* Linn. Moths of these species are not easy to follow when they are in flight, and careful concentration is needed to watch them when they are not very com-



ESBRADFORD.

Fumea casta Pallas

ESBRADFORD

Tinea pallescentella Staint.

mon, especially for *Pancalia loewen-hoekella*, the larvae of which feed on the roots of violets (*Viola* spp.).

Larvae are plentiful in spring, and Honeysuckle (*Lonicera periclymenum* Linn.) may be examined then for the larvae of *Ypsolophus nemorellus* Linn. and *Y. xylostellus* Linn. Bramble (*Rubus fruticosus* Linn.) may be examined in early spring for the mines of the larvae of *Tischeria marginata* Haw., and later the Bramble shoots

are fastened together by such larvae as those of *Notocelia uddmanniana* Linn.

Here are some notes for late May and June: disturbing the herbage around ponds should stir up specimens of *Cataclysta lemnata* Linn., *Nymphula stagnata* Don., *N. stratiotata* Linn. and *N. nymphaeata* Linn., though all four species may not occur at the same pond. I have taken *N. stratiotata* at light in my garden here at Morden;

presumably it had bred in a garden pond nearby and had flown away at night from the confines of the pond.

Keep a look-out on the trunks of lime trees (*Tilia* spp.) for the local species *Chrysoclista linneella* Clerck. This pretty moth is reputed to occur especially in towns and it certainly occurs in London.

One moth which is considered local turns up regularly in my garden, though I must admit that I haven't yet found the larva. This moth is *Pyrausta verbascalis* Schiff. The larvae feed on Wood Sage (*Teucrium scorodonia* Linn.) which, according to Kent and Lousley (1951-7) in 'A Hand List of the Plants of the London Area', is common throughout the area. I should be interested to hear of any other Member's experiences with this moth.

The larvae of *Anacamptis populella* Clerck may be found rolling the leaves of Poplars and Aspens (*Populus* spp.), and of Willows and Sallows (*Salix* spp.), whilst the larvae of *A. betulinella* Vari roll the leaves of Birch (*Betula* spp.). The moths are very similar, indeed, the two species were only separated in 1941.

The larvae of the following local species may be found: *Telephila schmidiella* von Heyd. in the rolled leaves of Marjoram (*Origanum vulgare* Linn.), *Stomopteryx albipalpella* Herrich-Schaeff. in the shoot-tips of Petty Whin (*Genista anglica* Linn.), *Gracillaria semifascia* Haw. in conically rolled leaves of Maple (*Acer campestre* Linn.) and occasionally of Sycamore (*A. pseudoplatanus* Linn.), *Argyroplote pomedaxana* Pierce and Metcalfe (= *porphyra* Huebn.) in rolled leaves of Crab Apple (*Malus sylvestris* Mill.) — I know of *A. pomedaxana* in Surrey, Devon, Glamorgan and Huntingdon, but are there any other records? — *Alucita spilodactyla* Curt. on the leaves of White Horehound (*Marrubium vulgare* Linn.), and *A. galactodactyla* Schiff. on the leaves

of Burdock (*Arctium* spp.).

D. Ollevant (1514).

REFERENCES

- KENT, D. E. and LOUSLEY, J. E. (1951-7). *A Hand List of the Plants of the London Area*. Reprinted from the *London Naturalist*. London Natural History Society, London.
MEYRICK, E. (1928). *A revised Handbook of British Lepidoptera*. Watkins and Doncaster, London.

The Hymenoptera Aculeata

For those specialising in the ants, bees and wasps the winter provides little chance of fieldwork. While winter collecting is important for the coleopterist, and even the hemipterist, it is only for those hymenopterists who extend their interests to the Parasitica that winter collecting of adult insects is practicable. Many of the 'classic' sites hunted through by the coleopterist, such as grass tussocks, under bark, etc., can yield parasites, including some of the fine, larger Ichneumoninae, solitary parasites of lepidopterous larvae.

Although there is little to be done in the field, there are many matters to be pursued in the study. Mounting, identifying, recording, all are an integral part of the work which is begun in the field and which should be carried through to completion, and there is always the planning of future fieldwork to be done. I want here to deal with just two aspects of fieldwork, namely, the collecting-kit, and the labelling of specimens.

Time in the field is valuable, particularly with aculeates, which are so dependent on fine weather. Thus the object is to design a field-kit that can cope with numbers of specimens quickly and easily and yet allow the correlation of specimens to any observations that may have been made during the capture of the insects. My own system is based on metal carrying-tins holding eighteen $1\frac{1}{2} \times \frac{3}{8}$ glass tubes and available from dealers. I stick paper over the metal partitions and can then write brief

details directly over each tube. Alternatively, each tube position can be given a number, and details of the captures entered into a field notebook against the appropriate numbers. I find the first method better for general collecting and surveying in an area, while the second is more appropriate when detailed studies are being undertaken.

The rest of my field-kit follows from this. My main items in addition to the carrying-tins are: a simple light-weight net, for catching flying insects and beating; a trowel, mainly for hunting ants, but also for digging around other nesting-sites; a simple pooter, using a $3'' \times 1''$ tube, for removing insects from the net after general beating; a second pooter, using the $1\frac{1}{4}'' \times \frac{3}{8}''$ tubes, particularly useful for taking nest samples of ants; two or three $3'' \times 1''$ tubes with a pad of cotton wool soaked (not too liberally) in ethyl acetate for killing the captures; a few tubes of various sizes; a field notebook; and a one-inch-to-the-mile ordnance survey map of the area to be visited. This basic kit can be adapted to any special needs. For instance, those entomologists collecting bumble bees would need tubes of a larger size than $1\frac{1}{2}'' \times \frac{3}{8}''$, and a cyanide-bottle may be preferred for killing the captures.

The correlation of the specimen with associated observations must be carried through to the final mounted specimen, and so I would just like to spend a little time writing on labelling. Every specimen should be provided with a label giving the place and date of capture and the name of the collector. A four-figure map-reference and/or a number reference to an entry in a field notebook can be added, but do not replace the basic data. If comparatively few specimens are taken, and these are mounted soon after capture, it is probably adequate to put the tube number of the specimen on the data label. If

larger numbers are involved, the final labelling may be deferred, and an 'interim' label bearing only the tube number and date may be used. Alternatively a continuous number sequence can be used, the first specimen of the year (1964) being numbered 64001 or 640001, and so on. If a simple number-label is used, a full data label should be added as soon as time permits. When a number system is used, the same number can of course apply to several specimens provided that the data and observations are common to all. I use number sequences for bred *Parasitica*, and find them convenient for relating different species bred from the same host. I use the 64100 series for parasites bred from aphids, the 64200 series for those bred from leaf-miners, and so on.

But I have written enough about indoor work, for there is one job which can be done in the field. Many aculeates nest in hollow stems, those of Blackberry (*Rubus fruticosus* Linn.) and Elderberry (*Sambucus nigra* Linn.) being particularly popular. Hollow stems can be collected now, and then kept for the occupants to emerge. In this way several species that are rarely taken on the wing can be found, for example, certain of the black species of *Mimesa* as mentioned by Spooner (1948). It is important to keep any stems under normal outdoor conditions, not in artificial warmth.

J. C. Felton.

REFERENCE

- SPOONER, G. M. (1948). *Trans. R. ent. Soc. Lond.*, 99: 129-172. The British species of Psenine Wasps (Hymenoptera: Sphecidae).

FROM OUR NORTHERN CORRESPONDENT

This article is being written on a grey December day. It is the season

when we have a little time to remember the exciting moments of the year that is past, and to prepare for further, and we hope even happier, times ahead. There is time too for us to ponder a little on the progress we make and the value of the work we do. It is in this mood that I have requested our Editor to allow my article to take the form of general comment, rather than the specific comments which usually make up my contribution to the *Bulletin*. These comments have a bearing on our Society, of which I have been happy to hold Membership since its very early days.

The Bulletin

Those of our Members who are fortunate enough to live in the South of England are able to enjoy not only much more favourable conditions for the pursuit of entomology but also to share fellowship with many of our Members. For many other Members, however, bughunting is a lonely road, and often for such Members the only link with people of like mind is through the printed word. This is the great value of our *Bulletin*. I wonder sometimes whether we make the most of it. Having done a little towards the items printed, for a large number of years, I am more than aware of the terrific amount of voluntary work which goes into producing our journal, but no Editor can produce the best result without a constant supply of interesting contributions, and more often than not these have not been forthcoming. Now why is this so? I believe it is for two reasons. Firstly, Members are often reluctant to share their knowledge, for all sorts of reasons. Speaking as one who has received all manner of replies to the published word, let me say that the friendships formed over the years and the pleasant correspondence received, have always far

outweighed the occasional unpleasant jibe or criticism which always seems to follow one's efforts. Speaking too as one who gives more than a little time in lecturing, particularly to young folk, let me add that there is unlimited satisfaction in getting people started on the long and very pleasant trail of nature study. The second reason why contributions have not been forthcoming is, I believe, that we have tended, as a Society, to strive for perfection, and have sometimes lost the brightness of early endeavour. Long rules of Editorship regarding style, names and expression are all very well but not if they stifle the early efforts of the young Member who has found out something that is exciting and perhaps quite new. To my mind, and here I give simply my own opinion, it would be much better to have a dozen early efforts, however imperfect they may be, from young Members, so long as these efforts carried the true marks of the young enthusiast, than to have the *Bulletin* filled with articles from senior Members only. Other journals may require the mark of perfection in every regard but one of the main objects of our Society has always been to foster and encourage beginners, and a ready acceptance of articles by young Members would add to this worthwhile aim. This point leads naturally on to the next one.

Use of English Names

It would serve no good purpose to enter into the sterile arguments as to whether one should use English names for insects or not, but I do feel that some comment should be made in view of the very forthright article on the matter, which recently appeared in our *Bulletin* (*Bull. amat. Ent. Soc.*, **22**: 87-8). Surely the correct answer is to use whichever name is most suitable for the occasion. When I go to lecture at a

Rotary Club, the members of the club would consider me, quite rightly, an absolute 'egg-head', if I made reference to *Acherontia atropos* Linn. I talk to them about the Death's Head Hawkmoth and show them why it is so called — and jolly interesting they find it too. Or again, when visiting the junior scientific society at a local school, do we stir up excitement over *Vanessa atalanta* Linn.? We certainly do not, for we have a 'whale of a time' talking about the 'smashing' Red Admirals we saw (or failed to see) last summer. Many of the English names are a sheer delight and add greatly to the interest of a talk to the folk on the fringe of the subject of entomology. On the other hand, when giving my annual report as Local Recorder to our learned Society, naturally I refer to *V. atalanta*. There is a time and a place for both names, and this is only one of the many points on which I take issue with Mr P. G. Taylor (719). Being able to trot out an endless number of Latin names is by no means the sign of a good naturalist. Give me the man who knows the insects because he is a true field naturalist—and whether he calls them by one name or another will not matter very much.

Collecting

Here again I feel constrained to say a few things, particularly as other Members have taken up the matter with me. There have been many articles recently in our *Bulletin* and in other publications which have quite rightly emphasised the need for nature conservation. We have received many warnings with regard to over-collecting, etc. Now these may be both necessary and desirable, but I feel it would be quite wrong to make the term 'collector' into a dirty word. Of course we are collectors—and almost all the finest naturalists have always been. The only real way of learning about most species of

insects is to collect them [initially—Ed.]. The butterfly-net, the mercury-vapour light-trap, the beating-tray—these and many other recognised means of collecting are perfectly desirable and useful assets. The thing we must guard against is over-collecting, particularly of local species. I would question whether collecting has really damaged many British species. A case in point is the well-known and quite splendid colony of the Marsh Fritillary Butterfly (*Euphydryas aurinia* Rott.) near Reading. This very small colony was visited constantly by many of our own Members and other collectors, all of whom had an eye for the varieties which were present. The numbers rose and fell over the years but there was never any danger to the colony until a new housing scheme swallowed up the field at one fell swoop. In my own district we had a moor which was noted for a splendid variety of *Lasiocampa quercus* Linn. var. *callunae* Palmer (Northern Eggar Moth). It was visited by collectors for half a century without any apparent effect until one day a moorland fire wiped out the entire colony for ever. Now these remarks are not intended to convey that haphazard collecting is either desirable or necessary. I do intend to stress that reasonable and careful collecting adds greatly to our knowledge, gives us great pleasure and does no harm to the balance of nature.

In closing let me add that there is, in my opinion, a real place for a Society such as ours. We have had many shortcomings over the years, but with a lead from our present Editor I feel sure we shall go into the New Year with added zeal. I wish Members a Happy New Year and good hunting.

5.12.63. W. E. Collinson, F.R.E.S.

(247).

In view of various comments re-

ceived by me, I have taken the opportunity in this *Bulletin* of summarising my views on the Editor's task. These will be found (a) in the introductory paragraph of 'Guidance For Authors' on page 2, and (b) in the Editorial reply to 'Letter to the Editor' on page 33. These views are relevant to some of the comments in Mr Collinson's article, as is the first paragraph of the Editorial on page 1. I will just add here that I hope, when I have time, to write an article mentioning those species (such as the Large Copper Butterfly (*Lycaena dispar* Haw.)) whose end in Britain has certainly been caused, or at least greatly hastened, by over-collecting. —Editor.

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CONSERVATION

5. CONSERVATION IN PRACTICE: THE FUTURE

We have already seen some of the problems with which conservationists—particularly ordinary amateur entomologists—are concerned. I hope in this, the final contribution of the series, to give a very brief summary of more general principles, and, perhaps, to predict the results which the future efforts of conservationists might produce.

It is clear, of course, that many of these efforts must come from the ordinary amateur entomologists referred to above: for by exercising a proper measure of responsibility and by taking care to explain the concept of conservation to those less familiar with the principles of preservation of wild life, a body of entomologists can create a 'climate of opinion' which furthers the pursuit of knowledge by observation rather than the building-up of large collections for their own sake.

That such efforts are fully worth-

while is evident from every point of view. Although aesthetic feelings chiefly lead us to apply ourselves vigorously to furthering the practice of conservation—and who, indeed, would wish to lose unnecessarily a single member of our beautiful and interesting fauna or flora—there are other considerations of more practical importance. It has been indicated in previous articles that an examination of the slow decline of a species from natural causes yields information of great value which cannot be obtained if rapid extermination of that species occurs artificially. *Observational* study does not involve destruction of its subject, whereas collecting does. There is, too, a possibility that any particular species may prove to be potentially useful, and its elimination may therefore rob mankind of a valuable method of manipulating his environment to his own practical (as well as aesthetic) advantage. Although this possibility may seem relatively remote, the increasing use of methods of biological control (which each involve, as balancing influences in the scheme of control, very many animals and plants in addition to the actual primary controlling organism) renders this not so obscure a consideration.

To those who would suggest that such manipulation of the environment is contrary to the principles of conservation, I would comment that such manipulation—which would occur only where necessary—should lead to an increase of knowledge which, in turn, would allow the minimum alteration in any ecological balance to be carried out whilst still permitting the change necessary to modify the habitat or its inhabitants to the satisfaction of the human population. Since this sort of manipulation would be applied only to habitats where change was necessary anyway, it would be by far the best compromise. Modern conservation takes into

account, then, the changes which must occur in a habitat, and the older idea, although commendable, of never disturbing any habitat, is now outdated under the pressure of present-day industrialisation and human population expansion. In any case, the introduction of a single organism into a habitat and the virtual elimination of another—the primary effects of successful biological control—are far preferable to wholesale slaughter of most of the inhabitants of a habitat, a slaughter which is all too frequent where insecticides are employed.

We have seen that a 'climate of opinion' amongst entomologists, once formed, will serve to protect rarities from the detrimental effects of overcollecting. With such a climate of opinion in existence, too, it will be possible much more easily to influence non-entomologists to preserve our fauna, and so to lead up the creation of a practical, functional and influential body for the conservation of our wild life. Such a body, you may say, already exists as the Nature Conservancy and its various allied organisations. Would it be too much to hope for an extension of the Nature Conservancy, with very strong financial and legal support from the Government?

The Nature Conservancy at present cannot influence the Government sufficiently because it lacks data on specific industrial outrages against our wild life: anyone can help by sending information about the effects of toxic chemicals, etc., to the Conservancy, and in particular, AES Members can write about such matters to the Society's Representative one th Nature Conservancy's Entomological Liaison Committee, Mr T. G. Howarth (196).

It will be clear, however, that ultimately conservation can only be successful if a sufficiently large nucleus of knowledge is built up to further its

aims. This is the knowledge of insect lives and inter-relationships which, in giving a full appreciation of the factors which influence insect populations, forms part of that synthesis of ideas which we call ecology. In these articles I have tried to stress that observation will yield a reward more exciting than will simply the acquisition of animals for a collection: a reward, indeed, of knowledge of the habits and habitats of our wild life.

There is too, of course, much which must be done to ensure that adequate tests are carried out before insecticides are released for general use; that chemical and biological effluents are not allowed to pollute water either directly or after washing through soil; that building creates the minimum amount of havoc in the countryside; or in short, that these and other industrial schemes are carefully examined and their possible biological repercussions fully worked out so that adjustments necessary to conserve animal populations can be made accordingly in the schemes before they start.

All of these factors can and must be co-ordinated to ensure that conservation of our wild life is carried out. The efforts towards this co-ordination (which ultimately, we hope, will be performed by the sort of body—a Nature Conservancy with much extended powers—that I have outlined above) must, initially at least, come from entomologists like ourselves, who constitute one of the sections of the community which is most evidently affected in these matters by the expansion of this country. We must further the aims of conservation in as active a way as we are able—for by so doing we can help to save ourselves from a sterilised industrial wilderness, can hand on to the next generation an unruined countryside, and can produce, in fact, a *balanced* march of progress.

5.10.63.

H. V. Danks (2907).

INSECT PESTS OF GARDENS — VI

Insects as Vectors of Plant Virus Diseases

Although many agencies, including man, various nematodes and certain mites, can be responsible for the dissemination of virus diseases of plants, by far the greatest spreading of these diseases is carried out by various members of the Insecta.

Amongst the insect vectors of viruses, species of the Order Hemiptera must be regarded as being prime vectors, as they are responsible for spreading the greatest number of insect-borne viruses. Insects of other Orders, i.e., Orthoptera, Coleoptera and Thysanoptera, are responsible to a far smaller degree, and in the case of Coleoptera the virus is transmitted mechanically on the biting, chewing mouthparts of the beetles.

The relationship between viruses and the hemipterous vectors, i.e., aphids, leaf-hoppers and white-flies, and between viruses and the thysanopterous insects, thrips, is interesting though rather obscure. There is some evidence, however, that the transmission of viruses by these insects is essential for the spread of the diseases, and that the diseases cannot be spread by any other natural means. (All viruses are transmissible by grafting.)

There is a direct connection between an insect's feeding habits and the kind of virus it is able to transmit. Any virus which is confined to attacking the parenchyma cells of the leaves or stem of the host plant, produces symptoms called "spotted wilt". (Virus names usually refer to the host plant and describe the symptoms which the virus produces on that plant. One type of virus may produce different symptoms on different plants or on different parts of the same plant.) The vector of spotted wilt of Tomatoes (*Lycopersicon esculentum* Mill.) is a thrip, *Thrips tabaci* Lind. Since the thrip's

feeding habits involve a rasping-sucking action which damages only the epidermal and underlying parenchyma cells of the host, the virus is only transmitted to these cells. The structure of the mouthparts of *T. tabaci* makes it impossible for the insect to transmit a virus to the phloem. Therefore *T. tabaci* is of no importance as a vector of viruses which are localised in the phloem.

The Hemiptera have piercing-sucking mouthparts, and their system of feeding is very efficient in the transmission of virus diseases. The long narrow 'beaks' of the bugs inject their inoculum deep into the tissues of the plant, without wholesale destruction of the surrounding cells. This is very important, because viruses can only multiply in living cells. Insects such as large biting species that, by their feeding habits, kill large areas of cells, are poor vectors of virus diseases. Many hemipterous insects which cause little obvious damage to the plant must be regarded as serious pests because of their role in transmitting viruses. The aphids are perhaps the most important members of this group, and more than twenty different species have been shown to be vectors of a considerably larger number of viruses. Certain species, such as *Myzus persicae* Sulz. and *Macrosiphon gei* Linn. are known vectors for a dozen or more different types of viruses.

It will be seen from the above that virus transmission by insects can be divided into two types:

- (a) Mechanical distribution on the mouthparts of the vector, as in beetles.
- (b) 'Biological' transmission, as in aphids, etc.

However, there are complications, because an aphid like *Myzus persicae* may be able to transmit one type of virus biologically, and another mechanically on its mouthparts. The full nature of biological transmission is

not fully understood, and the term is used rather loosely. Biological transmission of a plant virus by an insect usually has one or more of the following attributes :

- (1) An apparent multiplication of the virus within the insect's body.
- (2) An incubation period in the body of the insect, that is, a period which elapses after the insect has fed on infected plants before it becomes infective or viruliferous.
- (3) A degree of specificity between the insect and the virus it transmits.
- (4) An obligatory relationship of the virus with the vector.
- (5) A relationship between the age or life stage of the insect, and its ability to transmit a virus.
- (6) Congenital transmission of the virus from one generation of the vector to the next.

Examples showing one or more of the above requisites for biological transmission are too numerous to attempt to mention them all, but one good example is found in the case of *T. tabaci* (the vector of tomato spotted wilt) which must contract the disease in the nymphal stage in order to transmit it subsequently. If an adult feeds on an infected plant, the insect does not become infected, thus fulfilling obligation (5) above.

Vectors may be infective for a short period only after feeding on a diseased plant, or the insect, having once fed upon an infected plant in the nymphal stage, may become infective for the rest of its life.

The apparent relationship between certain groups of insects and groups of viruses that produce similar symptoms, has led to the use of such insect relationships in the classification of viruses. According to Smith (1937) in 'Textbook of Plant Virus Diseases', there are four more or less distinct groups of plant viruses, as follows :

- (1) The mosaic group transmitted by aphids.
- (2) The yellow group transmitted by leaf-hoppers.
- (3) The group characterised by the formation of spots with concentric rings on the leaves of the host, and transmitted by thrips.
- (4) Those transmitted by white-flies, and causing a thickening of the veins and abnormal leafy outgrowths on the lower side of the leaves of the host ('enation').

Research on yellow mosaic virus of Turnips (*Brassica rapa* Linn.) has shown it to be transmitted mechanically by the Turnip Flea Beetle (*Phyllotreta nemorum* Linn.), and by certain other beetles and their larvae. 28.3.63. A. J. Tuton (2639).

REFERENCE

SMITH, K. M. (1937). *Textbook of Plant Virus Diseases*. J. and A. Churchill, London.



NOTES ON THE LEPIDOPTERA OF CORNWALL

For the fourth time in five years I have spent my summer holiday on the north coast of Cornwall during early August. This year I could not help noticing the much lower numbers of those moths and butterflies which in previous years were numerous. For example, specimens of *Pterostoma palpina* Clerck (Pale Prominent) and *Lymantria monacha* Linn. (Black Arches) were very few indeed. *Aglais urticae* Linn. (Small Tortoiseshell) and *Vanessa atalanta* Linn. (Red Admiral) were extremely scarce. Even the numbers of *Pararge aegeria* Linn. (Speckled Wood)—a butterfly which in previous years was extremely common—were much reduced. However, numbers of *Nymphalis io* Linn. (Peacock) had increased fantastically. Mr C. Brind (3140) and I on two oc-

casions visited a sloping meadow bordering a wood. Here we estimated that there were at least 200 specimens of *N. io* on the wing. They were all to be found round extensive patches of Lesser Knapweed (*Centaurea nigra* Linn.). In the same meadow *Argynnis paphia* Linn. (Silver-washed Fritillary) was flying. *Polyommatus icarus* Rott. (Common Blue) and the 'whites' (*Pieris* spp.) were numerous. The occasional specimen of *Vanessa cardui* Linn. (Painted Lady) and one of *Gonepteryx rhamni* Linn. (Brimstone) were observed.

During my stay in St Mawgan, Mr Dodwell (3482) and I went together to have an afternoon's collecting together. This proved to be one of the highlights of the holiday. We were fortunate with the weather, and in the course of the afternoon observed fourteen species of butterfly, and seven species of moth, in flight. Since Mr Dodwell had his car with him we were able to travel away from the north coast and visit an entirely different area. By pure chance we found a colony of *Thecla quercus* Linn. (Purple Hairstreak) and we estimated seeing about fifty specimens of this species in flight. Later in the afternoon we found two smaller colonies of *T. quercus*. We came back having taken four specimens of this species each. We were surprised at their perfect condition and it is possible that we arrived very soon after their emergence.

Towards the end of my stay I went out with Mr H. Brind and Mr C. Brind. We visited an area with extensive sand dunes and Marram Grass (*Ammophila arenaria* Link). We used a very successful light, a car head-light operated from the car battery. However, by early morning we were not as keen to carry the battery as we had been when we started out the previous evening. The night was miserable, for there was a clear sky and the weather was

cold with squalls of misty driving rain. However, we were successful in obtaining *Agrotis vestigialis* Hufn. (Archer's Dart), which was numerous, *Tholera cespitis* Schiff. (Hedge Rustic), *Luperina testacea* Schiff. (Flounced Rustic) and *Leucania litoralis* Curt. (Shore Wainscot).

Because of the weather conditions moths were none too eager to fly. We observed that the moths were to be found resting on the flowering-heads of the Marram Grass. We were surprised at the large numbers of moths to be found in this way. In connection with collecting on unpromising nights, I might mention that I have recorded captures from the flowering-heads of a number of species of plant, and I find it a good practice always to examine any clumps of blossom which I notice.

Looking back on this holiday, I consider that it was marred by bad weather. I had hoped to obtain specimens of species restricted to the coastal areas and to some extent I was successful, but at the time I bemoaned the weather and everything else which seemed to interfere with my activities. Perhaps I had built up my hopes too high before the holiday.

G. D. Trebilcock (2976).

ORANGE TIPS

In the January 1962 number of the *Bulletin (Bull. amat. Ent. Soc., 21: 9)* Mr N. W. Archer (2975J) describes a stout walk he did the previous Easter. The identification of the female Orange Tip Butterfly (*Anthocaris cardamines* Linn.) in flight is decidedly difficult. There is, however, a way by which one might have a reasonable chance of catching a specimen. This is to take a stand on a line where the males are flying in reasonable numbers, to

net every white butterfly of the right size, and to examine it. The first time I tried this, by an odd coincidence the very first smallish white butterfly I caught happened to be a female Orange Tip! One is not always so lucky, but a little patience will bring its reward.

Of course, breeding is the best way of all to secure specimens. Eggs can be found with fair ease (if they are there at all) on the flower stems and young seed pods of the Lady's Smock (*Cardamine pratensis* Linn.) or Hedge Mustard (*Sisymbrium officinale* Linn.), but don't forget that the caterpillars are cannibals and must be kept separated from each other.

3.11.63. Trevor Trought (1373).

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A DOUBLE-TAILED POPLAR HAWKMOTH LARVA

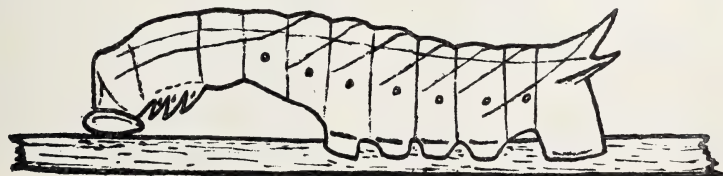
On 23rd September 1962 I found seven almost fully grown Poplar Hawkmoth caterpillars (*Laothoe populi* Linn.) on a small clump of willow bushes (*Salix* sp.) in Charlton, South London. I took them home and fed them, together with some Puss Moth caterpillars (*Cerura vinula* Linn.) obtained from the same bushes, on Lombardy Poplar (*Populus nigra* Linn. var. *italica* Duroi). At the end of three weeks all of the Poplar Hawkmoth larvae had pupated in glass jars below dead grass, and I left them out of doors until February 1963. I then removed one of the pupae and placed it in a tin. After a fortnight of being

kept warm and moist over the fire-place, the pupa gave rise to a dark grey male moth.

Four more imagines emerged in the second week of April (three males and one female) and from these I obtained a pairing. During the next week the female laid a total of 207 eggs, from which I had reared eighteen pupae by the beginning of July. These pupae produced ten male and six female moths from which three pairings were obtained, and I soon had 325 eggs. Earlier I had given my brother a few caterpillars and from these he had obtained a female moth which had extensive red patches on its forewings.

I then had 325 eggs but unfortunately I was about to leave on holiday, so I gave some to a friend and fellow-entomologist to rear for me while I was away, and the remaining eggs (295 of them) I stuck with rubber solution on to the branches of the willow bushes from which I had collected the caterpillars the year before.

When I returned from holiday on August 17th, my friend gave me five large caterpillars reared from the eggs which I had given him earlier. These larvae, I thought, were not enough for me to be sure of eventually obtaining pairings between the moths which should result from them, so I returned to the willow in the hope of finding some caterpillars which had hatched from the eggs which I had left there. I did, in fact, find seven caterpillars in various instars, but the four largest were of an extremely pale blue-green colour, and when I



saw them on the fallow leaves they appeared to be white. The largest of the larvae was about to shed its second to last skin and was very pale, but its most striking characteristic was that it had TWO tails (see Fig.). At first I thought that one of the tails was only a piece of skin, but closer inspection showed that skin was being shed from both tails.

Unfortunately I accidentally killed this larva when I left it overnight in a pill-box in which I had once kept some preserving crystals, for the fumes remaining from these crystals proved fatal to the larva.

Of course, it is impossible to be sure of the cause for the development of this 'double tail', but I think that this larva was the result of inbreeding. I would like to know if there is any other record of a double-tailed Poplar Hawkmoth larva, and if so what variation is apparent in the resulting imago.

1.9.63. Michael Noble (3539J).

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YOU HAVE BEEN WARNED

The lepidopterist may feel at times that the forces of Nature are arrayed against him.

His larvae and pupae are attacked and destroyed by parasitic Diptera and Hymenoptera, and by ants, earwigs, viruses and moulds.

The mercury-vapour light-trap attracts cats which eat the moths around the trap. Bats take their share of these moths. Sometimes the trap is watched by owls, and this year on several occasions I have seen a toad watching, but I have no evidence that either reduced the catch. The trap is invaded by titmice who enjoy a free breakfast: I have had three of these birds at one time! On one occasion I found a beetle devouring the abdomen and eggs of a female Fox Moth (*Macrothylacia rubi* Linn.).

In the collection one has to contend with the larvae of the Museum Beetle (*Anthrenus museorum* Linn.), etc., and with mould.

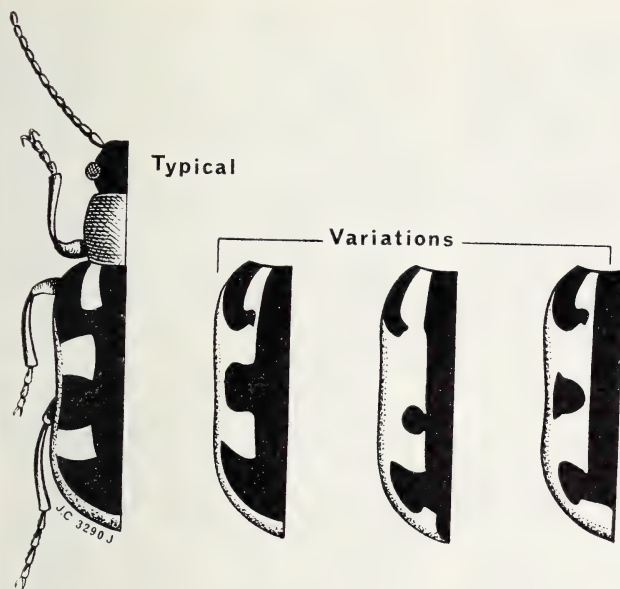
But this year I sustained my first attack from another quarter. I have been in the habit of keeping my setting-boards in a cupboard while the specimens on them dry. Imagine my consternation on 22nd July when I went to set some more specimens and discovered that a mouse had passed up all the boards between the setting-strips and had eaten the bodies of almost all the moths I had set during the past month, some 100 specimens. Till then I had been deceived by the charm of the Long-tailed Field-mouse (*Apodemus sylvaticus sylvaticus* Linn.) but now, I confess, I have been at work with mouse-traps. I also keep my setting-boards in a metal meat-safe!

19.11.63. L. W. Siggs (243).

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THE ASPARAGUS BEETLE: A FEW VARIATIONS TAKEN IN SURREY, 1963

During June this year, I captured some specimens of *Crioceris asparagi* Linn. (Asparagus Beetle). They were found on Asparagus (*Asparagus officinalis* Linn.), and also on the same plant were a few larvae of *C. asparagi*, all of which were in different stages of development. When the larvae were picked off the plant they emitted a dark coloured liquid (as do the larvae of the Small Tortoiseshell Butterfly (*Aglais urticae* Linn.) and Peacock Butterfly (*Nymphalis io* Linn.)). The beetles preferred a plant that was growing in the sun, and did not go near a plant growing in the shade. The latter plant had a good crop of berries in the autumn whilst the former bore only a few berries. Could this have anything to do with the fact that the beetles were only found on



one plant? Or was it caused by the positions in which the plants were growing?

The beetles varied greatly and out of the few that I managed to capture I only got one typical specimen. My diagrams shew the difference between the specimens. I wonder if any Member has a banded specimen in his or her collection? I would like to know if you have come across any kind of variation in this species.

18.11.63. J. Cooter (3290J).

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DRAGONFLY COLLECTING IN BARNET

My methods of collecting Odonata are very simple because I find that, on a hot August day, when I am beside a pond or ankle deep in a marsh, as little 'clutter' as possible is the most comfortable. The most essential piece of equipment is a net. I myself use a folding nylon net, which is light in weight, and I find that a captured

specimen is easier to see through the mesh of a nylon net than through that of a cotton one. I used to carry a ten-foot long bamboo pole to which I could attach my net-handle, but I now find that better control and manoeuvrability of the net can be obtained with the latter only two feet or less away from the user.

When a dragonfly is caught and identified, I transfer it to a light-weight container—not to a killing-bottle as I find these heavy to carry and breakable. I use pill-boxes for damselflies and tobacco tins lined with paper for the larger Aeshnids. That is all I carry except possibly a few polythene bags for unexpected larvae I might come across by the water's edge, and a bottle of drinking water, as dragonfly collecting and chasing is very hot work.

When I arrive home, I kill one specimen at a time but not until I am ready to set it. Carbon tetrachloride, the poison I use, acts very quickly and does not discolour or leave stains on dragonflies.

Most species lose their colour very quickly after death, possibly in less than a day, and as I haven't the money for expensive equipment I have to degut my specimens as soon as possible. This, after a bit of experience, is quite simple: one just cuts down the underside of the abdomen as far as the eighth segment and pulls out the gut. A dried stem of grass or a thin sliver of wood is inserted into the back of the thorax, and the sides of the abdomen fold round it. This method is not the most efficient one but it does sometimes retain the colours and specimens preserved in this way give an idea of the dark and light colours which make up their patterns. The same method of preservation can be used for the larvae. For damselflies I use a horse's hair or a broom's bristle inside the abdomen.

The few exuviae I have either were found by accident while I was walking through reeds or are from emerged specimens bred in the aquarium.

I have tried collecting various orders of insects including the Lepidoptera, but to me dragonflies are the most interesting because they are so difficult to catch and because they have such a fascinating life-history. Another reason for my interest in the Odonata is that most amateur entomologists know about butterflies and moths [? - Ed.] whereas there is plenty of information still to be found out about dragonflies.

Andrew McGeeney (3283J).

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COLEOPTERA OBSERVED IN THE WESTERN PYRENEES JULY 1963

Readers will recall the account by Mr P. W. Cribb of the expedition made by Messrs Coleridge, Cribb, Kennard and myself to the Western Pyrenees (*Bull. amat. Ent. Soc.*, 21:

95-7), in which account the areas which we covered are described. One spot not referred to in that article is a large forest near the village of Villars Cotterets (Aisne) which we visited on our way to Paris. In the glades of this forest I netted several specimens of the chafer *Gnorimus nobilis* Linn. which were flying about clumps of umbelliferous plants. This beetle is fairly common and widespread in France but is local and rare in England, being almost confined to the New Forest.

Collecting in the Pyrenees is exciting for the coleopterist as little work has been done there; the more remote areas are today still not surveyed or properly explored.

While in the village of Bareges, Hautes Pyrenees, we met two students from the Sorbonne who were collecting Coleoptera. They had, in the previous year, been members of a party which had collected seven species of Coleoptera new to science, around the high lakes of the east-central Pyrenees. Owing to the heavy grazing which occurs on the French side of the Pyrenees, flower-frequenting beetles are few in comparison with those of the Alps, but this is compensated for by the numbers of ground-beetles and wood-boring beetles. The lower slopes are heavily wooded with Beech (*Fagus sylvatica* Linn.), Oak (*Quercus robur* Linn.), Larch (*Larix decidua* Mill.) and Douglas Fir (*Pseudotsuga mensiesii* Franco). Dead rotting logs are plentiful and each produced several beetles.

Just below the snow line and around the high mountain lakes the ground is strewn with stones and boulders and these sheltered hosts of Carabids. Often one boulder would harbour as many as twenty beetles. The stony beds of the upland and lowland streams produced many species new to me, and some which are only found in the Pyrenean mountains. The areas fringing the melting snow (7,000 ft

and above) yielded very little for the lepidopterists but provided the best collecting for me. It was perhaps fortunate from my point of view that we had several periods of very heavy mist so that I received ample help from my colleagues, in turning over rocks and searching for beetles.

I set out below a few general comments on some of the species taken : *Emus hirtus* Linn. Not common. Found on fresh cow-pats.

Leptura aurulenta Fab. and *L. quadri-fasciata* Linn. Fairly common in old logs. Present in all stages.

Oberia occulata Linn. Taken at Heas (inside car). It had probably flown from the reed-beds (*Phragmites communis* Trin.) by the stream below Heas. In England it is a rare fenland insect.

Agelastica alni Linn. Very common in all stages on the Alder trees (*Alnus glutinosa* Gaertn.) alongside the torrent of the Gave de Pau. The leaves of these trees were heavily eaten by the larvae of this beetle.

Zabrus obesus Dej. and *Nebria lafren-aye* Dej. Both common under stones at high altitude.

Carabus splendens Olivier. Taken at night in the hotel garden at Bareges.

Staphylinus caesareus Cederh. Common in valley bottoms near streams.

S. ophthalmicus Scop. One found on a stone wall near Bareges.

Brachinus explodens Duft. Found infrequently under stones by the roadside near Lourdes.

Cicindela campestris Linn. Common on all mountain paths and among the rocks.

Leptinotarsa 10-lineata Say (Colorado Beetle). Three specimens, presumably migrating, were taken at 7,000ft on the edge of the snow beside a lake. These captures give an indication of the vigour and range of the insect.

As we visited the Pyrenees late in

July, the sweep-net was of little use and most of the beetles were captured by picking them off the flower-heads. The water-net produced very little, but any coleopterist visiting the Pyrenees should equip himself with a strong carpenter's chisel, as the heavily wooded slopes are covered with dead trees which have been attacked by longicorn beetles. Many of these Longicorns can be taken on the wing in the hot sunshine.

H. J. Cribb (2044).

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SOME OBSERVATIONS MADE NEAR LAKE THUN, SWITZERLAND, IN AUGUST 1963

During the last week of August of this year, I stayed in a small village called Merligen, on the banks of Lake Thun, not far from Interlaken in Switzerland. A week had already been spent touring through Germany, but, because of rain, no collecting had been possible there. Merligen lies where a small river named the Justistal enters Lake Thun. Behind it rise two mountains, the Gemmenalp Horn (6,748ft) to the east of the Justistal, and the Sigriswiler Rothorn (6,713ft) to the west of the Justistal. The lower slopes of these mountains are covered by forest. Between the forest and the houses of the village lies a belt of pasture-land.

I found that the *Buddleja* trees, which were to be found in many of the gardens in the village, attracted a large variety of butterflies. The most common species was *Argynnis paphia* Linn. (Silver-washed Fritillary). I counted up to eight of these insects on one tree at the same time, and as many as four on a single flower-head. There were also large numbers of *Vanessa cardui* Linn. (Painted Lady), *Vanessa atalanta* Linn. (Red Admiral), *Aglais urticae* Linn. (Small Tortoise-

shell), *Nymphalis io* Linn. (Peacock), *Polygonia c-album* Linn. (Comma) and *Pieris brassicae* Linn. (Large White). By far the most interesting species of butterfly to be found on the *Buddleja* trees, however, was *Papilio machaon* Linn. (Swallowtail). Although it was not as common as the other species already mentioned, I saw well over a dozen specimens during my stay of a week.

On the third day of my stay I went for a walk up the path that follows the valley of the Juststal. Within half a mile of the edge of the lake the village ended and the belt of pasture began. Just as suddenly as the scenery changed, the species of butterfly present also changed. The only species that I had already seen in the village and which was found in the pastureland too was *Pieris brassicae*. Here, *Agapetes galathea* Linn. (Marbled White), *Pieris napi* Linn. (Green-veined White), *Aricia agestis* Schiff. (Brown Argus) and *Polyommatus icarus* Rott. (Common Blue) were all numerous. Again there was a great change, in the species of butterfly present, when I came into the forest. There were still many specimens of *Pieris napi* to be seen, and once again *Argynnis paphia* was fairly common, though not as common as it had been nearer to the lake. Where the path ran close to the river, there were large numbers of specimens of *Erebia aethiops* Esp. (Scotch Argus), although the species was in evidence to a certain extent throughout the forest. Large Skipper Butterflies (*Ochlodes venata* Br. and Grey), settled on the heads of flowers, were seen occasionally, as were specimens of *Gonepteryx rhamni* Linn. (Brimstone) and *Limenitis camilla* Linn. (White Admiral). On the return journey, just before reaching the village, I saw one individual of *Colias hyale* Linn. (Pale Clouded Yellow). I had hoped to find *Erebia epiphron* Knoch (Small Mountain Ringlet) but it was not until the day

before my return home that I found several specimens near the summit of the Stanserhorn (6,215ft).

I had little opportunity to do much moth-hunting. I did see, however, a large number of Jersey Tiger Moths (*Euplagia quadripunctaria* Poda) which were settled on the flowers of the *Buddleja* trees.

It was altogether a very enjoyable and interesting week in which I saw eighteen different species of butterfly. 9.10.63. D. O. Bizley (2860J).

OBSERVATIONS ON BUTTERFLIES IN THE SOUTH OF FRANCE, 1963

(Messrs P. W. Cribb, H. J. Cribb and W. L. Coleridge have motored from Lyons to Digne via Grenoble, and stayed for a time in the region around Fayence, Frejus and Grasse, eventually making their way northwards along the Col d'Allos to Barcelonnette. After a return trip across the Italian border through the Col de Larche, they move away from Barcelonnette. The story of their entomological trip in the Maritime and Eastern French Alps continues from Bull. amat. Ent. Soc., 22 : 133.)

The next day we drove off northwards through the mountains via the Col de Vars to Briançon. On the way we made a stop, and discovered by the roadside swarms of *Leucoma salicis* Linn. (White Satin Moth) emerging from their cocoons which were scattered all over the Sallows (*Salix* spp.) which edged the roadway. The moths were flying about the trees, or were already in copulation on the branches. We collected several pairs and these later produced large batches of eggs. The moth seems fairly safe from predation in this habitat as there are very few birds to be seen, although the moths are



very conspicuous and day-flying.

The Col de Vars proved to be a very winding pass but not so difficult as the Col d'Allos. The slopes are green and full of flowers but we did not linger as we intended to reach La Grave in the Hautes Alpes in time to secure hotel rooms for the night. We made a brief stop at Briançon to refuel and then climbed up the Col du Lautaret. Stopping by the roadside for lunch, we found ten larvae of the Spurge Hawkmoth (*Celerio euphorbiae* Linn.) feeding on the Cypress Spurge (*Euphorbia cyparissias* Linn.) which was growing on the edge of the road-

way. The larvae were nearly fully grown and easily identified by their very showy colouring. We found the road up to the Col very bad, as most of the tunnels had collapsed and new roadways were in the course of being constructed to bypass them. Here the road was made up of timbers, and rubble blasted out of the mountainside, and we had to go very carefully.

The village of La Grave is at about 4,000ft and lies in the shadow of the Massif of La Meije which is second only to Mont Blanc in height and rises to a highest point of some

14,000ft. Huge glaciers hang on its slopes and the view from the village is breath-taking. The whole area is a collector's paradise as over 3,000 species of wild flowers have been named from the valley and slopes, and there is a flora and fauna in the whole of the area stretching from the valley below La Grave up to the glaciers of La Meije.

We were greeted like members of the family at the hotel as we had been there on two previous occasions. After unloading all our equipment in our rooms we went down into the valley for an hour or so before the evening meal and there met a whole group of people with nets. There were boys and girls and a man and woman. I asked if they belonged to a society but got the laughing reply "C'est ma famille" from the man. Both parents were lecturers in agricultural schools and one daughter was a member of a biology research unit in Paris. Later they visited us at our hotel and we were surprised at the primitive methods which they used both for collecting insects and for setting them. A cyanide jar is carried at the ready and insects are killed as captured, and are papered, or pinned into a cork-lined box. Long continental pins are used to pin specimens, and the setting-boards are made with the sides pitched upwards so that the wings of the insects on them are elevated from the horizontal by an angle of several degrees. The setting-pins have large coloured heads, and setting is done without forceps. The family seemed to have no knowledge of pill-boxes, killing-agents other than cyanide, or relaxing. We also met another collector staying at our hotel who used similar methods and spent his evenings collecting under the street-lights of the village.

After we left the family, we walked up through a wood of deciduous trees through which flowed small rivulets from the mountainside. A group of

scouts who had passed us on our way up the path sent a member back with a large butterfly in his hand. It was a damaged female of *Limenitis populi* Linn., a large species which we had not expected to find here. There were several Aspen trees (*Populus tremula* Linn.) growing on the edges of the wood and I waited in a glade thick with lilies (*Lilium* sp(p).) and Meadow-sweet (*Filipendula ulmaria* Maxim.) for only a short while before a male of *Limenitis populi* made its appearance, circling down within range of my net. On the wing this butterfly is reminiscent of the Purple Emperor (*Apatura iris* Linn.) and the female of *L. populi* is as large as that species. I took a further female early next morning in almost the same spot as she sailed down to sip at the dew upon the bushes. I do not believe that this species is usually taken so far south.

Our collector friend in the hotel accompanied us in the morning to the top of the Col du Lautaret in search of *Erebia* spp. and the high-mountain butterflies *Colias palaeno* Linn., *Pontia callidice* Esp. and *Oeneis aello* Huebn. This last-named butterfly is said to have a bi-annual life-cycle and as I had taken it in 1960 I did not expect that we should see it this year. My surmise was correct but we were able to find the breeding-quarters of *C. palaeno* on the slopes of the Lautaret where large clumps of dwarf *Vaccinium* sp. grew amongst the short grass. *Vaccinium* spp. are the foodplants of *C. palaeno*, the butterfly being found in the high Alps and in the north of Europe (Prussia and Pomerania). The males are a soft yellow and the females white, and the black costal markings have a pink fringe. Higher up the slopes where there were large rock-falls I took the fast-flying *Pontia callidice* and a specimen of the 'blue' *Polyommatus glandon* Prun. (= *orbitulus* Esp.). These rocks are the stronghold

of some of the scarcer *Erebia* spp., and conditions make it almost impossible to run after them and the only way of making captures is to take up a stand and hope that they will fly within net-range. As soon as the sun goes behind a cloud the butterflies drop down amongst the rocks, and hide. The grassland species behave similarly, dropping into the grasses if the sun disappears. Right up by the permanent snow flies the largest of the species of *Erebia* found in this area, *Erebia alecto glacialis* Esp. This butterfly is about the size of *Maniola jurtina* Linn. and is totally black on the upperside, with warm brown on the underside of the forewings. When disturbed it flies very fast and one's first swipe with the net at any specimen is usually the last. A butterfly which is common at this altitude (about 7,000ft) is the fritillary *Brenthis* (= *Boloria*) *pales* Schiff.

Among the birds seen at this altitude the commonest is the Alpine Chough (*Pyrrhocorax graculus* Linn.), distinguished from the Chough (*Pyrrhocorax pyrrhocorax* Linn.) by its yellow beak. These birds fill the air with their cries of alarm as one climbs up to the snow. We saw Golden Eagles (*Aquila chrysaetus chrysaetus* Linn.), and among the rocks were several Black-eared Wheatears (*Oenanthe hispanica hispanica* Linn.). Generally birds were noticeable for their absence in these alpine areas, which is probably very fortunate for the insects. The specimens of *Maculinea arion* which were flying here were newly emerged and several were of the form *unicolor* Hormuzaki, which has only a single (discoidal) spot on the upperside. The imagines are also smaller than those of the lowland form.

On the day after our trip to the Lautaret my father and I climbed the slopes of the Meije while Mr Cole-ridge spent the day in the valley.

The climb takes about two hours and we reached a height of about 9,000 ft where we could look down on to the permanent snow and the Glacier de la Meije. The meadows below the glacier are rich in flowers and butterflies and several species occurred here which we had not met elsewhere: the 'blues', *Polyommatus pheretes* Huebn., *P. eumedon* Esp. and *P. rippertii* Frey.; the apollo *Parnassius mnemosyne* Linn.; and the 'copper' *Chrysophanus dorilis subalpina* Spey. We had hoped to find the high-mountain fritillary *Melitaea cynthia* Huebn., which is very similar to *Euphydryas aurinia* Rott. (Marsh Fritillary) but the male of the former has white markings on the upperside of the forewings. We were not successful in obtaining *M. cynthia* but we did take another species of *Erebia*, *E. gorge* Esp., high up among the rocks. Climbing here is dangerous as the rock and shale often move underfoot, and we observed considerable recent falls which had ripped trees from the ground below, and there had also been a large fall of ice from the glacier. Everywhere springs and streams gush out of the rocks and soil, and below the ice a river roars, to burst out and pour in a raging torrent down the mountainside to the river at La Grave. The view and the place itself are the most exhilarating that I have encountered in our travels and are more than a reward for the long climb.

We had our meal on the slope above the snow and then climbed down to cross the torrent by means of a rickety bridge of logs. On the far slope was a large plantation of Larch (*Larix decidua* Mill.) split up by small grassy valleys in which there were flowers and their accompanying butterflies. Another 'blue' occurred here, *Polyommatus donzelii* Boisd. This is like a small *P. damon* Schiff. but has the flying and resting habits of our native Small Blue (*Cupido minimus*

Fuessl.). My father, searching amongst the rotted stumps of the Larches in the wood for beetles and their larvae, was quite successful here. *Parnassius apollo* Linn. was very common, and we again found the 'brown', *Maniola lycaon* Rott. The Large Wall (*Pararge maera* Linn.) was also flying along the pathways and settling on the rocks as we walked down to recross the stream. A storm was forming over the Galibier and we made a hasty descent to the hotel and our evening meal. Torrential rain and a thunderstorm brought early darkness, and we packed in preparation for an early departure in the morning.

The drive down from La Grave to Grenoble was uneventful and we were able to enjoy our last views of the high mountains. We left Grenoble on the road to Chambéry and just south of there we stopped to have our midday meal, and explore some of the wooded hillside bordering the road. It was the hottest day we had had since we arrived in France and in the sun it was almost unbearable, with the heat rising from the rock walls along the pathways. There were quite a few butterflies on the wing and a large number of newly emerged Peacocks (*Nymphalis io* Linn.) were feeding on the pathside flowers. A new species to us here was *Erebia aethiops* Esp. (Scotch Argus) the specimens of which were newly emerged.

The slopes were heavily wooded in places and there were large quantities of Alder Buckthorn (*Frangula alnus* Mill.) and the commonest butterflies on the wing were Brimstones (*Gonepteryx rhamni* Linn.), also newly emerged. I took one female Queen of Spain Fritillary (*Argynnis lathonia* Linn.) but the heat was becoming oppressive and we decided to start to make our way back to Lyons in time to catch the train which was to carry us back to Boulogne, the boat and home.

It had been a full and memorable trip in which we had covered about 1,000 miles while collecting. The 'Rapier' car had behaved impeccably and everything had gone without a hitch. The daily cost in hotel charges and food, etc. (this includes wine) was about 25 NF (37/-), and we had made our hotel bookings and food purchases as we went. It is advisable to carry food sufficient for the journeys out and back as the cost of food at the French ports is very high and one should always avoid centres of *tourisme* if high costs are to be avoided. The journey would not have been possible without the car—which is, of course, the heaviest item of expenditure for its transport to France and back and for its petrol requirements.

Clothing can be kept to a minimum but a light raincoat is essential in view of the sudden storms which occur, and at least two pairs of good strong boots, shoes or 'bumpers' are needed. I 'put paid' to two pairs in the fortnight. Our collecting equipment consisted of two butterfly-nets apiece (my father had a sweep-net and water-net also); a plentiful supply of glass-topped boxes; and Mr Coleridge and I had two boxes of setting-boards each. We set specimens each evening and any surplus specimens I papered in small cellophane envelopes and packed these into 'Oxo' tins. I tried packing some specimens in polythene envelopes but found that the plastic was so airtight that condensation caused the specimens to become mouldy. My father packed the beetles of each day's haul into a separate tube with crushed leaves of Laurel (*Prunus laurocerasus* Linn.) to keep the specimens relaxed. Specimens of Hymenoptera and Orthoptera I placed between layers of cotton wool in 'Oxo' tins and sprinkled a few crystals of menthol over the top layer before sealing. The only losses

were in the case of the mantids, in which the bodies decomposed, due I believe to the contents of the abdomens. All papered specimens were relaxed satisfactorily on my return by placing them into a polythene sandwich-box half filled with wet sand. The sand was covered with perforated zinc and a sheet of thin card, and some menthol crystals were inserted to prevent moulds. In forty-eight hours the specimens were ready to set.

28.8.63. P. W. Cribb (2270).



JUNIOR NEWS SECTION

I have received four letters from boys for this News Section, but none from girls.

Both Brian Sheen (2596J) of "Croft", Luxulyan, Bodmin, Cornwall, and Wesley Caswell (3133J) of 46 Lewgars Avenue, Kingsbury, London N.W.9, have sent me their records for common butterflies seen last spring and summer. Wesley reports seeing Large Whites (*Pieris brassicae* Linn.), Peacocks (*Nymphalis io* Linn.) and Small Tortoiseshells (*Aglais urticae* Linn.) in fairly large numbers, but like Brian his 'first sightings' were in very very late spring. This is not surprising!

Fifteen-year-old J. Gill (3566J) of 372 Devonshire Road, North Shore, Blackpool, Lancashire, is a new Member who is particularly interested in swallowtail butterflies (Papilionidae). He tells me he is anxious to obtain larvae and pupae of *Papilio machaon brittanicus* Linn. — the British Swallowtail Butterfly — and suggests that someone may like to offer some to him in exchange for other material. J. (I do not know his Christian name) would also like to correspond with his fellow lepidopterists.

S. G. L. Cole (2934J) of 22 High

Street, Putney, London, S.W.15, may have overcome the problem of 'sweating' in caterpillars carried in tins, and, as we know, moist air does kill larvae. He solders perforated zinc over a hole cut in the lid of the tin, using solder paste as he finds this easier to use than solder rod. Tins thus treated have ample ventilation, and will let the moist air out. I think a little damp sponge will prevent dehydration (drying out).

Wesley Caswell had great success catching the larvae of the Buff Tip Moth (*Phalera bucephala* Linn.) last September. His apparatus is simple but ingenious. A long piece of string is tied to a door-knob (not still attached to a door) and the knob is thrown up into the tree Wesley wishes to collect from. A few sharp tugs bring down a torrent of insects. I feel, however, that this method is open to some criticism. It could lead to over-collecting and also to a great deal of damage to the trees: but its greatest drawback is that it will most certainly annoy parents, who are already suspicious of your collecting activities, and who will not like living in a house without door-knobs! I am certainly going to try Wesley's 'door-knob' collecting method. I only hope I can get my door-knob back again!

One of our Members asks whether it is usual to catch House Crickets (*Gryllulus domesticus* Linn.) away from buildings. The answer is "sometimes". This insect is supposed to be a native of the sunny lands of the Middle East, but it has certainly settled down in England. The insect is usually found in heated cellars, boiler-rooms and such places, but there are colonies living out of doors in Corporation rubbish-dumps near Cambridge.

Andrew Smith of the St Ivo School Entomology and Natural History Society (2941A) had a caterpillar brought back by his father, with

loving care, all the way from Moscow. It turned out to be a larva of the Lackey Moth (*Malacosoma neustria* Linn.), and took to British Hawthorn (*Crataegus* sp.) straight away. At least it will not have to face another Russian winter.

The club I am associated with — St Ivo Ent. and Nat. Hist. Soc. as it is affectionately known — is found in St Ivo school at St Ives, Huntingdonshire. It is very lucky in having an electrically heated store, which has easily been changed into a 'tropical room'. This was originally meant only for insects, but I am afraid that occasional spiders, snakes, turtles and other creatures are now to be found there. Various species of locusts and cockroaches, as well as House Crickets and stick insects, are bred there quite successfully. Any surplus specimens are distributed — *gratis* — to naturalists. Before you race for your pen and paper to ask for some of our surplus, I must warn you that there is a long waiting-list for specimens, and it may be several months before your little parcel from us arrives (usually after you have forgotten what you asked for). I know that House Crickets (which 'sing' better than beetles) and stick insects (of the usual species *Carausius* (= *Dixippus*) *morosus* Br.) are in good supply.

For the last few years, expeditions by the St Ivo Society have been made during the summer holidays, both in this country and abroad, in order to add specimens to members' private collections and to the Society's live collection. St Ivo's expedition to Luxembourg last August was a modified Youth Hostel Association tour, and such a tour can be recommended. Our expeditions are successful in that many wonderful creatures are seen. A few amphibians and reptiles are brought back alive, but very few live insects ever reach St Ives.

The Society is earnestly seeking a new insect to culture (i.e., with which

to form a breeding stock) — but this will not be a member of the Lepidoptera. I don't suppose next summer's visit to the Isle of Wight and the New Forest will solve our problem, but a good time should be had by all.

Do let me know about your school societies' activities, no matter how ordinary they may seem: and any new ideas for collecting, setting or study will be doubly welcome.

I wish you good hunting.

8.12.63.

H. J. Berman (2941A).

REVIEWS

Water Beetles and Other Things, by Frank Balfour-Browne. Pp. 219. Illus. Blacklock, Farries and Sons, Ltd, Dumfries, 1962. Price 25/-.

Professor Balfour-Browne needs no introduction to the coleopterist as his published books on the British water beetles are well-known and he is the recognised authority on the group: but this, his latest book, should be read by all serious entomologists as he has set down his experiences, methods, problems and conclusions based on half a century of fieldwork. His unique records, maintained over such a long period and described in Chapter III, of the occurrence of water beetles, have enabled him to discuss problems of distribution and ecology of importance to all students of the British insect fauna.

After setting down the history of the list of British water beetles and the additions to and subtractions from the list since 1802, Professor Balfour-Browne describes his method of recording on the county and vice-county system. The writer of this review has had the pleasure of discussing this system with him and has learned many important rules all too often overlooked by less experienced

collectors. Professor Balfour-Browne has always recommended a uniform method of recording captures which, if more universally adopted, could do so much to assist future workers.

A further chapter divides the water beetles into groups according to their habitats, and the characteristics of the various types of habitat are examined in detail.

From the general entomologist's point of view the most important chapters are the last two, which deal with the origin of the water beetle fauna in the British Isles, and with many unsolved problems connected with insect ecology in general. Theories regarding the reappearance of species after many years' absence, and the ability of winged insects to re-inhabit suitable areas, are fascinating to any entomologist, although Professor Balfour-Browne soon dismisses any theory with which he is not in agreement!

In Chapter VIII under the heading 'Problems' it is characteristic that one of the problems discussed is the International Commission on Zoological Nomenclature, an organisation which has caused the Professor to put pen to paper on a number of occasions.

In addition to a short bibliography at the end of each chapter, the book concludes with a massive list of references taking up no less than 64 pages. For the coleopterist, whether he be particularly interested in water beetles or in other groups, this list is of the greatest value.

This book is, in the reviewer's opinion, a most important contribution to the literature of British entomology. Many of Professor Balfour-Browne's observations, and the lessons learned from his systematic collecting over such a long period, can be 'read across' to Orders other than the Coleoptera, and he has supplied future workers with a critical appreciation of fifty years of

specialised fieldwork, as well as a most readable book into the bargain.
L. S. W.

Life of the Wayside and Woodland, by T. R. E. Southwood, Ph.D., D.Sc., A.R.C.S., F.R.E.S., F.L.S. (Based on original volume by T. A. Coward, M.Sc., M.B.O.U.) Pp. 290. Pl. XXXII in colour and XXXII in black and white. Over 300 text Figs. Frederick Warne and Co. Ltd., London, 1963. Price 30/- net.

The original volume was published in 1923 and the seventh impression in 1948 and there can be few senior naturalists who have not, at some time in their career, read this book with pleasure and profit. The publishers understandably state that the large increase in knowledge in the last thirty years makes a complete review desirable. Dr Southwood has completely rewritten the text though adhering to the framework of the original volume. A definite approach to modern problems is always near the surface, and such references as "in localities that have escaped treatment with herbicides" frequently occur.

For convenience, the calendar year is divided into six two-monthly periods. Each period has a section devoted to the main animal and plant groups, dominant species for that period being described. Thus, the July-August period contains sections on mammals, birds, reptiles, fish, Lepidoptera, Coleoptera, Hymenoptera, Neuroptera, Diptera, Hemiptera, Odonata, Orthoptera, Thysanoptera, Arachnida, Crustacea, flowers, ferns, mosses, fungi and algae. A typical section, Coleoptera, describes the appearance, behaviour and habitats of the more conspicuous species, the Stag Beetle (*Lucanus cervus* Linn.), the click-beetles (*Athous* and *Agriotes* species), the Coral-brown Soldier-beetle (*Rhagonycha fulva* Scop.) and the lady-

bird beetles (Coccinellidae). Distinct line-drawings show the extreme pattern variation in three species of the last family.

In a volume which is intended as a general introduction to the natural history of the British Isles, ample illustrations are very desirable. I thought this book (with thirty-two plates in colour, thirty-two in black and white and over 300 text figures) was very good, though obviously it can only touch the fringe of the subject. Nevertheless it should assist the amateur to determine the Class and Order of many creatures and plants discovered in the field. For a fuller determination, the specialised works of this series are essential and, of course, this volume serves as a general introduction to those works.

As can be expected, the Lepidoptera, as a showy and popular group, receives good attention. For the youngster and beginner, the text is most interesting, especially as it lays stress on field work. It introduces the beginner to pupa-digging in January, early species and hibernating larvae in March, the commons and downs in May, the chalk hills in July, larva-hunting and migrants in September and the winter moths in November; a full calendar and not just a summer's hobby. Also it is pleasing to see the smaller species ('Microlepidoptera') well mentioned.

Four useful appendices are included. Appendix 1 deals with leaf-damage caused by galls, leaf-miners, etc., and is illustrated by twenty clear line-drawings. Appendix 2 describes the Berlese-Tullgren funnel for the extraction of animals from soil, plant debris and dung. Appendix 3 is a small directory of Natural History Societies: our Society receives an honourable mention. Appendix 4 is a useful list of reference books for further study.

In conclusion, I can say that this is a fascinating volume for the naturalist

and layman alike. It introduces the entomologist to the other occupants of our countryside and is most readable even to anyone not particularly interested in natural history. It should be on the bookshelf of every amateur naturalist and in the libraries of those clubs and organisations connected with our countryside.

R.D.H.

LETTER TO THE EDITOR

Sir,— There was a time when the word 'bughunter' appeared quite often in the *Bulletin*. It was rather endearing, with its suggestion of light-heartedness and its recognition of the catholicity of our membership.

I fear we shall not see it again in the *Bulletin's* prim pages; unless it is used as a term of abuse, like 'foxhunter' when employed by the League Against Cruel Sports.

Honestly, must we be so priggish and puritanical in our attitude to 'collecting for the fun of it'? After all, most of us began that way; even the most scientific of entomological research-workers were probably bug-hunters once. Their young counterparts today won't feel very much at home in the AES if we are really going to take the line that collecting (except for 'serious scientific purposes') is something to be ashamed of. I must say, if I were a boy, or a beginner, the current issue of the *Bulletin* (Vol. 21, No 257) would fill me with gloom. The Editorial, taken in conjunction with the Editorial comments in the correspondence columns, has a daunting and 'Praise-god Barebones' air. Of course we should deplore greedy and wasteful collection, e.g., the use of 'm. v.' traps when the unwanted catch is not carefully released and protected from the birds, taking long series of scarce species, and so on. But the damage done by collecting

is surely so very small—judged scientifically and not emotionally I should have thought it was minute—that it is inconsiderable by comparison with the effect of insecticides, weed-killing sprays which kill foodplants, tree-felling and urbanisation. And in my experience at any rate it just isn't true that the majority of collectors are 'immature', 'selfish' and stupid. Most of the ones I know are good field naturalists, and are quite as much concerned about conservation as our Editor is. (I know colonies of *Maculinea arion* Linn. and *Euphydryas aurinia* Rott. which have been saved from destruction by the activities of collectors who nevertheless were not so conscientiously high-minded that they were unwilling to describe themselves as 'bughunters', nor so concerned with the 'Importance of Being Earnest' that they would not admit that they collected 'for fun'.)

I can't help feeling that the Editor is opposed to them less on account of any conceivable damage they may do to the fauna than for their light-hearted approach to a pursuit which he thinks should be gravely scientific. "The puritans", said Macaulay, "hated bear-baiting not because it gave pain to the bear, but because it gave pleasure to the spectators."

John Moore (146).

The above letter was apparently mislaid, and omitted from the correspondence columns of an earlier issue, and therefore refers to the previous Editor and to his comments. Mr Moore still wishes to see the letter published, and apologies are extended to him for its late appearance.

However, the present Editor would like to take this opportunity of stating his own Editorial Policy and of commenting on the above item as far as the latter concerns this policy.

The Editor is necessarily impartial, but this does not mean that he is neutral. While, therefore, he is bound—space permitting—to publish articles submitted, provided that these might be of interest to Members and can conform to the standards of the *Bulletin*, it is his duty to see that no article (however well-intentioned) which could be used as an excuse to justify actions to the detriment of the Society or of entomology in general is published without suitable comment. Perhaps I could be forgiven, therefore, for making a short comment on the above letter.

First of all, the fact that the *Bulletin* conforms to some sort of scientific standard does not mean that non-scientists will be inconvenienced by this standard. I know that most Members welcome the present conformity in what, after all, is a magazine—and indeed, this conformity renders our *Bulletin* of use to more entomologists, not to fewer.

The fact that our hobby is scientific adds to its interest, but this does not mean that it *must* be pursued scientifically (although, of course, conservation is based on scientific principles): any entomologist may collect, etc., as he wishes *provided* that the interests of his fellow naturalists, or those of a future generation of naturalists, can be definitely shown to be not detrimentally affected. Our present Juniors, who are part of this future generation, will derive much pleasure from their hobby as they study the lives of the insects around them, and as they realise that it is on their future efforts, and on their outlook towards entomology, that the conservation of our wild life will largely depend.

To reiterate briefly what has already been explained in *Bull. amat. Ent. Soc.*, 22: 84-5, three of the most important reasons why a restraint on collecting is necessary are that collectors can and do damage insect populations

directly (this is fact); that these populations are chiefly those of rare species; and that insecticides, weed-killing sprays and the like are used by people who, quite naturally, are not prepared to be guided, let alone criticised, by entomologists some of whom are themselves busy killing rare insects.

We cannot, then, afford to lull ourselves into believing that the damage done by collecting is negligible. Macaulay, it has been said, owes his popularity partly to the conviction with which he twists fact to prove the justness of his opinions: I hope that we will not be guilty of attempting to justify harmful collecting by the same sort of ploy.—*Editor*.

NOTES AND OBSERVATIONS

THE ALDER MOTH IN DEVONSHIRE

It may be of interest to Members to know that I captured a fully grown larva of the Alder Moth (*Apatele alni* Linn.) at Tavistock, Devon, on August 18th of this year (1963). The larva was on a wooden gatepost which stood with a mixed deciduous wood on one side and a very damp meadow on the other. The gate was some one hundred yards from the banks of the River Tavy. The larva appeared as representatives of this species are typically depicted in the books—a little over one inch in length, black with yellow bands. It had characteristic long clubbed hairs which were shiny black in colour.

I inferred that the larva was soon to pupate, but in case it was not fully fed I supplied leaves of Alder (*Alnus glutinosa* Gaertn.) and Oak (*Quercus robur* Linn.). The insect was housed together with a matchbox-

ful of dry wood chips (mainly Oak). Within twenty-four hours it was spinning a cocoon in this wood, a definite 'cell' being formed on the side of the box. All seemed well until the 20th, when the larva appeared rather shrivelled. On the 21st it was dead, still enclosed in the flimsy cocoon. I have been unable to find any references to the rearing of this species and should welcome any information Members could supply on the subject. I should be particularly pleased to hear of suggestions as to the cause of death of this larva. As far as I could tell, it had no parasites.

Despite further searching in the locality where I discovered this specimen, I found no more Alder Moth larvae. Nevertheless, the area was well-wooded and yielded some other interesting species on sugaring. 20.9.63. John E. Cooper (2343).

THE SMALL RANUNCULUS MOTH (*HADENA DYSODEA* SCHIFF.) IN HERTFORDSHIRE: CORRECTION

In last May's edition of the *Bulletin* (*Bull. amat. Ent. Soc.*, 22: 67-8) Mr M. D. Reed (3438J) of Baldock, Hertfordshire, recorded the discovery of *Hadena dysodea*. Unfortunately his specimen turned out to be a rather small example of *Antitype flavicincta* Schiff. (Large *Ranunculus*). I must admit that Mr Reed's small banded specimen certainly closely resembled the illustration of *H. dysodea* on the plate in Dr E. B. Ford's book, 'Moths'. However, it must be remembered that this illustration depicts an insect which must be about forty years old, and not a freshly bred specimen. Had it done so Mr Reed would at once have noticed his error.

I hope this note will serve as a warning to Members not to publish records without being satisfied as to

the positive identification of their captures. Those in doubt should consult the recently revised AES Advisory Panel.

4.11.63. Bernard F. Skinner (2470).

REFERENCE

FORD, E. B. (1955). *Moths. New Naturalist Series*. Collins, London. Plate 32.

INTERSPECIFIC MATING IN THE PLUSIINAE

While employing myself with tidying-up a bed of *Primula denticulata* Smith, on 20th June this year, I discovered two freshly-emerged moths on the underside of a leaf. A second glance demonstrated them to be members of the Plusiinae *in cop*. Their markings, while having the features of this sub-family, were nevertheless very different from each other. My first thought was that they represented a particularly striking example of sexual dimorphism, but this was something I had never associated with the Plusiinae. My captures proved to be a female specimen of *Plusia festucae* Linn. (Gold Spot), and a male specimen of *Plusia pulchrina* Haw. (Beautiful Golden Y).

My mind was immediately filled with an image of drawers full of *P. festucae* × *P. pulchrina* hybrids. I was inspired by all those tenacious breeders who have presented the world with *Mimas tiliae* Linn. × *Laotloe populi* Linn., and *L. populi* × *Smerinthus ocellata* Linn. hybrids (to mention only some of the permutations which have occurred). My specimens were placed in a cage, and I lavished flowers and sugar solutions on them. After several days they had not parted, the genitalia having become distended and damaged, and both moths eventually died.

These specimens now grace my collection, but my appetite is whetted and I am looking for further examples of interspecific matings in the Plu-

siinae. Incidentally, during a search through back numbers of several entomological magazines including the *Bulletin*, I have not been able to find any reference to such matings in the Plusiinae, although I am certain I have seen such reports in the past — can any Members help in this respect? 21.10.63. K. Bradbury (2627).

OBSERVATIONS ON ORGYIA ANTIQUA LINN. AND ORGYIA RECENS HUEBN.

For several years I have been breeding *Orgyia antiqua* Linn. (Vapour Moth) and *O. recens* Huebn. (Scarce Vapourer). I have noticed several interesting things about these two species.

On looking back to an old *Bulletin*, I found an article by Mr R. G. Haynes (1945) (*Bull. amat. Ent. Soc.*, 20: 34). In this article Mr Haynes says of *O. antiqua* that he noticed that females paired more than once. In my experience, I have found that this is not true for *O. antiqua*, but it is true for *O. recens*. Most females of *O. recens* pair twice and sometimes they will pair again after they have commenced egg-laying.

This year imagines of the two species emerged from the pupa at the same time, and I noticed that males of *O. antiqua* were attracted to females of *O. recens* and attempted to pair with them: one male appeared to pair with a female, but the resulting ova were infertile.

Also this year I have had a partial second brood of *O. antiqua*. Six males of this brood were very light-coloured specimens, almost yellow, and another was a dark specimen without the typical white marks on its forewings. The other ten males which emerged were quite normal. Is it usual for the second brood of *O. antiqua* to contain light-coloured specimens?

I have noticed that in the natural

state some of the larvae of *O. antiqua* appear to be unwilling to leave their eggshells after hatching, but they can be dislodged by the wind or by being blown on. When dislodged in this manner they fall off the eggs on the end of long silk threads, and are in this way moved to other parts of their bush or to different bushes. Could this be a method of dispersal of the larvae?

17.11.63. J. Muggleton (3253J).

AN INTERESTING BROOD OF THE IRON PROMINENT MOTH

In July 1961, I took a typical female specimen of *Notodonta dromedarius* Linn. (Iron Prominent Moth) in my mercury-vapour light-trap, and procured a number of eggs from her which duly hatched and the resulting larvae fed up and pupated.

Between 17th May and 23rd July 1962, eleven imagines emerged, five typical and six (three males and three females) of a lighter suffused form.

Between 18th April and 2nd June 1963, eleven more imagines emerged, six typical and five (three males and two females) of the suffused form.

In each of the two years, I paired a male and female of the suffused form, but on both occasions the resulting eggs were infertile.

Apart from the interest of the suffused form, which is quite striking, the fact that 'lying over' occurs in this species is noteworthy.

Stainton (1857), Meyrick (1895) and Newman (1869) show the moth as single brooded. Kirby (1882) shows it as double brooded, but this may refer to continental specimens and not to British ones. Newman and Leeds (1913) show it as double brooded, but single brooded in the North. South (1961) says that in some seasons and in some localities the moth

appears twice in a year. My 'm.v.' trap records for the past three years show a fairly regular appearance of *N. dromedarius* from May to August. Has anyone recorded that *N. dromedarius* may 'lie over'?

19.11.63. L. W. Sigs (243).

REFERENCES

- KIRBY, W. F. (1882). *European Butterflies and Moths*. Cassell, Petter and Galpin, London.
MEYRICK, E. (1895). *Handbook of British Lepidoptera*. Macmillan, London.
NEWMAN, E. (1869). *The Natural History of British Moths*. Hardwicke and Bogue, London.
NEWMAN, L. W. and LEEDS, H. A. (1913). *Textbook of British Butterflies and Moths*. Gibbs and Bamforth, St. Albans.
SOUTH, R. (1961). *The Moths of the British Isles*. 4th edn. Frederick Warne, London.
STAINTON, H. T. (1857). *A Manual of British Butterflies and Moths*. John van Voerst, London.

PREMATURE EMERGENCES FROM INDOOR OVERWINTERING

In reply to Mr P. J. S. Miles' enquiry (*Bull. amat. Ent. Soc.*, 22: 103-4) the following may be of interest. On 29th March 1947, a colleague of mine found a living specimen of the common Small Magpie Moth, *Eurrhpara hortulata* Linn. (Pyralidae), in the Herbarium of the Royal Botanic Gardens, Kew. The normal time of appearance of this species is, of course, June and July, and in fact a further specimen was found in the Herbarium on 13th June of the same year. The Herbarium is a large, centrally heated building, and the only explanation of the March appearance of *E. hortulata* would seem to be that a larva found its way into the building through an open door or window and pupated inside, and was stimulated to this very early emergence by the constant warmth of the atmosphere. This record was originally published in *Kew Bulletin* for 1949.

22.11.63. H. K. Airy Shaw (545).

REFERENCE

- SHAW, H. K. AIRY, ed. (1949). *Kew Bulletin*, 4: 234. Additions to the Wild Fauna and Flora of the Royal Botanic Gardens, Kew: XXI. (Lepidoptera, Pyraustidae).

THE AES ADVISORY PANEL

New Members have not been receiving the list of AES advisers for some time and have been writing to the Society's officers to locate sources of information on various groups. These enquiries have made it clear that some additional Advisers would be welcomed. The Panel has therefore been extended, as detailed below, to provide for Members a service of advice on and identification of most groups of British insects. A few other topics are covered, too.

How and when to consult the Panel

Members of the Panel will advise you on the study of their special groups and will identify small numbers of British specimens which are of particular interest to you. Large collections should be taken to a museum for identification. Try to use a copy of the relevant standard work if you know of one, before approaching the Panel.

Always mention that you are approaching the Adviser as he is a member of the Panel and give your own **Membership number**. You must **enclose postage stamps** to cover the cost of a reply or return of specimens. Members of the Panel are busy people, so try to send dead material to them during the winter when their own time is less likely to be taken up with field work. You are recommended to **send a stamped addressed envelope** for acknowledgement of the receipt of material which may have to await time for its identification. **Labelling** — with details of locality, foodplant, date, time and mode of capture, etc. — often greatly simplifies identification. Every specimen should be fully labelled on the same pin as bears the specimen or its mount. Details of locality will be

treated as confidential if this is desired.

The Society is most grateful to the many specialists who serve on this Panel, without any remuneration other than the occasional specimen taken, with permission, from an interesting series that has been sent in. It is hoped that Advisers on those groups that are noticed incidentally or as pests will be sought after as frequently as members of the Panel willing to identify commonly collected Orders.

New advisers on appropriate subjects not covered below are always welcomed by the Hon. General Secretary.

ADVISORY PANEL

Coleoptera (Beetles)

General advice and identification

D. TOZER (36), 98 Copdale Road, Leicester.

Staphylinidae

H. R. LAST (117), 12 Winckworth Road, Banstead, Surrey.

Water-beetles

Prof. J. W. A. F. BALFOUR-BROWNE, M.A., c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

Diptera (Two-winged Flies)

General advice

L. PARMENTER (895), 94 Fairlands Avenue, Thornton Heath, Surrey.

Larvae (approximate identification)

K. G. V. SMITH, c/o British Museum (Natural History), Cromwell Road, London, S.W.7.

Tachinidae (Parasitic Flies) and *Muscidae*

E. C. M. FONSECA, 58 Woodstock Road, Redland, Bristol 6.

Tipulidae (Crane-flies)

R. M. PAYNE (2982), 8 Hill Top, Loughton, Essex.

Ephemeroptera (Mayflies)

General advice and identification

of larvae and adults

T. T. MACAN, M.A., Ph.D.,
Stevney, Outgate, Ambleside,
Westmorland.

Heteroptera (Het-bugs)

General advice and identification

T. R. E. SOUTHWOOD, B.Sc.,
Ph.D., Imperial College Field
Station, Silwood Park, Sunning-
hill, Berkshire.

Aquatic species

T. T. MACAN, address above.

Homoptera

Aphidoidea (Greenflies, Blackflies)

H. L. G. STROYAN, M.A., c/o
Insect Pathology Laboratory,
Hatching Green, Harpenden,
Hertfordshire.

Auchenorrhyncha (Leaf-hoppers, etc.)

Dr W. J. LE QUESNE, Anne
Cottage, Lye Green Road, Ches-
ham, Buckinghamshire.

Hymenoptera

Aculeata (Bees and Wasps)

J. C. FELTON, 16 Park Drive,
Sittingbourne, Kent.

Formicoidea (Ants)

C. A. COLLINGWOOD, B.Sc.,
c/o National Agricultural Ad-
visory Service, Coley Hill,
Reading, Berkshire.

Parasitica (Chalcids, Ichneumons,
etc.)

G. J. KERRICH, M.A., c/o British
Museum (Natural History),
Cromwell Road, London, S.W.7.

Symphyta (Sawflies)

Dr V. H. CHAMBERS, 12 Doug-
las Road, Harpenden, Hertford-
shire.

Lepidoptera (Butterflies and Moths)

'Microlepidoptera' — identification

S. WAKELY (1860), 26 Finsen
Road, London, S.E.5.

ditto — general advice

D. OLLEVANT (1514), 3 Sal-
combe Drive, Morden, Surrey.

Noctuidae and their larvae

B. F. SKINNER (2470), 85 Elder

Road, West Norwood, London
S.E.27.

Saturniidae (Silkmoths)

B. O. C. GARDINER (225),
18 Chesterton Hall Crescent,
Cambridge.

European Butterflies

P. W. CRIBB (2270), 355 Houns-
low Road, Hanworth, Nr Fel-
tham, Middlesex.

Odonata (Dragonflies)

General advice and identification

A. E. GARDNER, 29 Glenfield
Road, Banstead, Surrey.

Orthopteroids (Cockroaches, Grass-
hoppers, Mantids, Earwigs, etc.)

*General advice and identification of
British and imported species*

A. E. GARDNER, address above.

Plecoptera (Stoneflies)

*General advice and identification of
larvae and adults*

T. T. MACAN, M.A., Ph.D.,
Stevney, Outgate, Ambleside,
Westmorland.

Thysanoptera (Thrips)

General advice and identification

T. LEWIS, B.Sc., Ph.D.,
c/o Rothamsted Experimental
Station, Harpenden, Hertford-
shire.

Trichoptera (Caddisflies)

General advice and identification

T. T. MACAN, address above.

Insect Migration

Recorder and Adviser

R. A. FRENCH, B.Sc., (2129),
Rothamsted Experimental Sta-
tion, Harpenden, Hertfordshire.

Botany

Identification of foodplants

H. K. AIRY SHAW (545), Royal
Botanic Gardens, Kew, Surrey.

*Selection, propagation and cultivation
of foodplants and floral attractions*

R. C. DYSON (91), 112 Holling-
bury Park Avenue, Brighton 6,
Sussex.

Plant Galls

D. LEATHERDALE, Eastfield Lodge, Whitchurch, Nr Pangbourne, Berkshire.

Apparatus and Techniques (except microscopy)

General advice

M. E. CASTLE (2490), 'Avellana', 172 Greenfield Crescent, Hazelton Gardens, Horndean, Hampshire.

Photography

35mm. still and general advice

R. W. J. UFFEN (1660), 4 Vaughan Avenue, Stamford Brook, London, W.6.

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VOL. 23

No. 263

MAY, 1964



PRESENTED

11 NOV 1964



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EDITORIAL

Following on the general remarks about the Society which appeared in the previous issue of the *Bulletin*, an article commenting on the AES is polished in this number. I can only endorse the ideas contained in this article, and confirm that our Society, although largely a 'publications' society, was also created to facilitate contact between fellow-entomologists. The means of such contact — the *Membership List*, the *Bulletin*, the *Wants and Exchanges List*, and the Society's various meetings — are already established. It only remains for Members to take full advantage of the opportunities provided.

In this issue, too, begins a series of 'Secretary's Notes', which will help to create a better liaison, through the Hon. General Secretary, between Members.

It will be noticed that the annual reports of the Society, which are normally published in May, are not included in this number. This is because copy for this issue was sent to press well before the A.G.M. took place, and these reports will therefore appear instead in the August *Bulletin*.

Finally, I must express my thanks to all contributors, particularly the authors who write serial articles and whose sustained efforts do much to improve the continuity between successive *Bulletins*, and to the proofreaders (Mr P. W. Cribb, Mr W. H. Tams and Mr R. W. J. Uffen),

whose valuable though unspectacular efforts go unrecognised by the majority of Members.

H. V. Danks (2907).

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OBITUARY

H. E. Hammond, F.R.E.S. (423) died on December 15th 1963 after a long illness. His main interest was in the larvae of Lepidoptera and he became an authority on their preservation by the inflation and heat-drying technique. He had published several papers on this subject the last of which appeared in 1960 (*J. Lepidopterist's Society*, **14** : 67-78). He had also published on the foodplants of larvae and, jointly with K. G. V. Smith, a series of papers on the parasites of British Lepidoptera (1952-61, *Ent. Gaz.*). He preserved larvae for the collections of several Institutions including Manchester Museum, Oxford University Museum, Birmingham Museum, and Yale University in the U.S.A. Many Members of this Society will be grateful for the kindness and help shown to them, particularly as young beginners, by him. It is typical of his warm generosity that he has left his fine collection of over 700 species of larvae of British Lepidoptera to another specialist on the subject, Mr G. M. Haggett, whose fine series of papers in the 'South London' proceedings will be known to Members. He is survived by his widow and a daughter, to whom we offer our condolences. A fuller obituary notice will appear in the *Entomologist*.

K. G. V. Smith.

SECRETARY'S NOTES

I have noticed quite plainly since joining the Amateur Entomologists' Society that the only field meetings held are in the London area. This disturbs me somewhat, because they exist only in that area, out of reach of the majority of our Members.

I would like to suggest that other areas have field meetings and lecture meetings organised and led by our older Members for the purpose of helping and encouraging our younger Members. I would like to see, throughout the country, centres where our Members can get together in those areas once a month for lectures, films, discussions and exhibitions during the 'off-season' and for outside walks and field meetings during the 'season'.

Each area would be self-organised, with its own local secretary and committee to arrange the programmes, etc., and Members of the Society, according to the localities in which they reside, would each be 'allocated' to one of these areas. I have seen this sort of system work extremely well in other societies and it would give Members outside the London area a chance to do something active within the Society.

Please give this some careful thought, and I will be very pleased to hear from any of you who are interested in this idea, with any suggestions that you may have.

Whilst on the subject of suggestions, I would also like to say that I shall be glad to hear from Members who have any other useful ideas for improving the facilities of our Society.

Advisory Panel

I would like to take this opportunity of reminding all Members, of the list of Advisers on the AES Advisory Panel that was published on

the final pages of the February 1964 issue of the *Bulletin*. Please make use of the Panel for your queries on identification of specimens and for general advice. The facilities offered are yours for the asking, and all help in furthering the objectives of the Society.

There are, however, still one or two gaps to be filled on the Panel, and if there are any Members who feel that they would like to help, please do not hesitate to write to me.

I have in my possession, a series of books written by Henri Fabre, translated by Alexander T. De Mattos, F.Z.S., and also a large number of slides ($3\frac{1}{4}" \times 3\frac{1}{4}"$) on the Order Araneida. These have been given by another Member of the Society to pass on to any other Member to whom these items may be of interest.

The titles of the books are:—

The Life of the Caterpillar
The Mason Bees
Bramble Bees and Others
The Hunting Wasps
More Hunting Wasps
The Mason Wasps
The Life of the Grasshopper
The Sacred Beetle and Others
The Glow-worm and Other Beetles
The Life of the Weevil
More Beetles
The Life and Love of the Insect
Insect Life
Fabre's Book of Insects

The only charge for these books would be the postage incurred.

I would like to add, as a final word in my notes for this issue, that I shall always be pleased to meet any Members who may be visiting my area (Somerset) or passing through at any time. I convey to all Members best wishes for the coming season, and wish you good hunting.

D. E. Dodwell (3482),
 21.2.64. *Hon. General Secretary.*

UNIT OF MEDICAL GENETICS

It will interest Members to learn that a new unit of medical genetics is to be set up at Liverpool University with a grant of £350,000 from the Nuffield Foundation. The new unit will be under the direction of Dr C. A. Clarke (1569) who will work with, among others, Professor P. M. Sheppard and Professor E. B. Ford.

The unit will primarily study the association between hereditary characters and liability to certain common diseases, for earlier work has shown that certain hereditary traits in man can result in increased susceptibility to particular disorders.

Dr Clarke and Professor Sheppard have used swallowtail butterflies (*Papilio* spp.) widely in their work as these butterflies and their larvae are convenient animals with which to study certain aspects of genetics.

Dr C. A. Clarke comments:

"Readers of the *Bulletin* may be interested to know that the formation of the new Nuffield Medical Genetics Unit in Liverpool stems directly from the studies of *Papilio* butterflies which P. M. Sheppard and I have carried out over the last ten years. The work began when the technique of hand-pairing was learnt ((1952). *Ent. Rec.*, 64: 98. Hand-pairing of *Papilio machaon* in February.), and the meeting with Dr Sheppard a short time afterwards was a most fortunate occurrence, the result of my answering his advertisement in your columns for pupae of *P. machaon* Linn. Since that time we have been led into some not altogether unproductive fields of enquiry both in butterflies and man. Always behind us has been the stimulating influence of Professor E. B. Ford who has so ably put forward the hypothesis of selection operating through polymorphism and whose

work is so well-known to the majority of your readers."

H.V.D.

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AES FIELD MEETING

Benfleet, Sunday 9th June 1963.

Five Members met the leader at Benfleet Station. The weather was very hot and dry so the party agreed to refresh themselves before starting the serious business of the day.

An area on Canvey Island was worked first and on the way there the party found the local plant Salsify (*Tragopogon porrifolius* Linn.) growing in company with its common relative Goat's-beard (*T. pratensis* Linn.). At this point we were met by another Member and his friend. We then turned left up by the farm, where everybody searched and beat the Blackthorn (*Prunus spinosa* Linn.) and Hawthorn (*Crataegus* sp(p).) for larvae. The following species of moths were noted:— Gold-tail (*Euproctis similis* Fuessl.), Brown-tail (*E. chrysorrhoea* Linn.), common Lackey (*Malacosoma neustria* Linn.), Pale Oak Eggar (*Trichiura crataegi* Linn.), Short-cloaked (*Nola cucullatella* Linn.), Figure of Eight (*Episema caeruleocephala* Linn.) and 'Common Hawthorn Ermel' (*Yponomeuta padella* Linn.).

In a field further up the lane the Corn Crowfoot (*Ranunculus arvensis* Linn.) was growing. More larvae were taken from other bushes at the top end of the lane. A ruby-tailed wasp (*Chrysididae*) was noted on a fence-post. Lunch was taken, and the occasional mosquito joined in!

We retraced our steps to the station, finding on the way back a batch of eggs of the Domestic Hen (*Gallus gallus* Linn.). By this time

a member of the party was feeling 'under the weather' from the effects of hayfever. Another had the itch from the Brown-tail larvae and a third had lost his purse complete with return ticket.

After a second call at the café Mr R. Payne and Mr R. W. J. Uffen left the party to work the area of rough ground above the railway. Here the grasshopper *Pholidoptera griseoaptera* Deg. was taken. The remainder of the group made their way past the church to the banks of Great Haven Creek. An unsuccessful search was made for the larvae of the Small Eggar Moth (*Eriogaster lanestris* Linn.). A batch of larvae of the Emperor Moth (*Saturnia pavonia* Linn.) were taken on a spray of Bramble (*Rubus fruticosus* Linn.). Species of butterfly noted on the wing in this area were:— Wall (*Dira* (= *Pararge*) *megea* Linn.), Small Heath (*Coenonympha pamphilus* Linn.), Small Tortoiseshell (*Aglais urticae* Linn.), Common Blue (*Polyommatus icarus* Rott.), Brown Argus (*Aricia agestis* Schiff.), Large Skipper (*Ochlodes venata* Br. and Grey), Small White (*Pieris rapae* Linn.), Green-veined White (*P. napi* Linn.), Large White (*P. brassicae* Linn.), Orange-tip (*Anthocaris* (= *Euchloe*) *cardamines* Linn.), Small Copper (*Lycaena phlaeas* Linn.) and Dingy Skipper (*Erynnis tages* Linn.). Moths on the wing were the Mullein Wave (*Scopula conjugata* Borkh.) and the Mother Shipton (*Euclidimera mi* Clerck).

A search was then made for the larvae of the Essex Emerald Moth (*Thetidia* (= *Euchloris*) *smaragdaria* Fab.) on Sea Wormwood (*Artemisia maritima* Linn.) which grows on the edge of the creek and the sea-wall to the east of Canvey Island bridge. At this stage we were rejoined by Messrs Payne and Uffen. Five nearly full-grown larvae of the Essex Emerald were found, giving the impression that we were a fraction too late for

this species.

After further refreshments were taken we made our way to the railway station having had a very satisfactory day.

L. Christie (710),
Leader.

22.12.63.

COLLECTING NOTES — Summer, 1964

The Smaller Moths

Cacoecia pronubana Huebn. Mr Bradford's notes read:—"The forewings are chocolatey-brown with richer dark brown markings. The hindwings are a yellowish-orange or tangerine colour and the amount of black around the edges varies a great deal, being very pronounced on some and covering a large area of the wing, and almost absent from others. (Another feature is the line of yellowish scales along each segment of the abdomen.)".

The only other moth which bears any similarity to *C. pronubana* is *C. oporana* Linn. (= *podana* Scop.), the termen of the forewing of which is more sinuate.

Cacoecia pronubana was first noticed in Britain in 1905, since when it has spread rapidly, although I suspect that it is commonest in suburban areas. It is double brooded, the larva of the summer brood feeding on many bushes and plants. The larva of the winter brood, however, feeds slowly throughout the winter and so is restricted to evergreen foodplants. I think that its chief foodplants in winter are Garden Privet (*Ligustrum ovalifolium* Hassk.) and garden *Euonymus* spp. The larva spins leaves together, and the moth flies most frequently early in the morning.

Pandemis corylana Fab. Mr Bradford reports:—"The specimen



ESB.

Cacoecia pronubana Huebn.

ESB.

Pandemis corylana Fab.

illustrated is clearly marked on the forewings, but in other specimens I have there are darker patches and the lines are much more diffuse. The basic colour of both forewings and hindwings is a yellowish buff, tending towards orange. The lines and markings on the forewings are a darker brown in colour, and the amount of grey-brown on the hindwings varies quite a bit. I've had numbers in my garden, and they

were most likely breeding in the oak trees at the end of it".

The pale patch at the apex of the hindwings is the feature usually used to differentiate this species by wing characteristics. It is a common moth, the larva feeding on the leaves of such trees as Hazel (*Corylus avellana* Linn.), Ash (*Fraxinus excelsior* Linn.), Dogwood (*Thelycrania* (= *Cornus*) *sanguinea* (Linn.) Fourr.), and Oak (*Quercus robur* Linn.).

Here are some brief collecting notes arranged in chronological order.

June-July: The larva of *Platyedra vilella* Zell. may be found on the flowers and seeds of Common Mallow (*Malva sylvestris* Linn.). It is a very local insect found in the southern counties — be careful that collected seed-heads do not go mouldy. Galls in Hemp Agrimony (*Eupatorium cannabinum* Linn.) will produce specimens of *Adaina microdactyla* Huebn., a fairly common moth throughout England. The moth also occurs again in September.

The imago of *Nemotois scabiosella* Scop. can be found locally on the flower-heads of Field Scabious (*Knautia arvensis* (Linn.) Coult.). I have found it on the North Downs.

July-August: Look for the larva of *Phtheochroa rugosana* Huebn. which feeds on the berries, stems and leaves of White Bryony (*Bryonia dioica* Jacq.), by spinning a portion of a leaf to a berry or stem. It is local in the southern counties of England.

Another local moth is *Euxanthis straminea* Haw., the larva of which feeds in the seed-heads of Black Knapweed (*Centaurea nigra* Linn.). It pupates in the heads and the moth emerges towards the end of August.

Larvae of the very local species *Gracillaria cuculipennella* Huebn. feed on Privet, rolling a leaf into a cone.

Rollled leaves of Alder (*Alnus glutinosa* (Linn.) Gaertn.) may produce the larva of *Gracillaria elongella* Linn.

Leaves of common Enchanter's Nightshade (*Circaea lutetiana* Linn.) if examined carefully may reveal the greenish mines of *Mompha terminella* Westwood. The mine starts as a spiral and there may be several mines in one leaf. The larva will transfer to a fresh leaf if one is placed against it. The larva pupates in the soil. This is a local insect.

September: Look for white blotches in the leaves of Restharrow (*Ononis repens* Linn.) and Clover (*Trifolium* spp.), as they may have been made by the larva of *Parectopa ononidis* Zell. It pupates in a white cocoon under the turned-down edge of the leaf.

Here are some notes on leaf-miners. Look for the mines of *Lithocolletis stettinensis* von Nicelli in the underside of leaves of Alder, and on the underside for those of *L. rajella* Linn. The mines of *L. anderidae* Fletch. may be found on the lower leaves of young seedling Birches (*Betula verrucosa* Ehrhart) which are growing amongst heather (*Erica* and *Calluna* spp.) and generally hidden by the heather. In the same leaves may be found the mines of *Nepticula betulicola* Staint.

Finally, collect the seeds of Hollyhock (*Althea rosea* (Linn.) Cav.) and Marsh Mallow (*A. officinalis* Linn.) for the larvae of *Platyedra malvella* Huebn. D. Ollevant (1514).

The Hymenoptera Aculeata

As Mr Felton was abroad at the time that this issue was sent to press, it is regretted that the series of notes on the Aculeata must be temporarily discontinued. It is hoped that the series will appear in subsequent numbers of the *Bulletin*.

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FROM OUR NORTHERN CORRESPONDENT

Local Recording

In the course of a recent article in the *Bulletin* (*Bull. amat. Ent. Soc.*, 22: 77-8) I made reference to a method of recording the various captures made at a mercury-vapour light-trap. The interest shown by

Members prompts me to say a little more on the interesting and very useful aspect of our fieldwork — accurate and consistent recording of species.

Area: It is convenient to confine one's attention to a specific area, and obviously one's own neighbourhood lends itself to such a plan. Usually it is found that a local naturalist or scientific society already covers the area or has done so in former days. Every AES Member would be well-advised to contact his local society, for, in my opinion, 'lone wolf' activity serves little purpose. It will be found that existing records are of inestimable value and interest. If it proves that the society records have lapsed there will be the added zest of bringing them up to date, adding new records, noting changes in insect population, etc. The recording should continue to cover the area which has been previously covered so as to ensure continuity of records and to avoid overlapping of other territory. It will perhaps serve admirably if I give brief details of my own area.

Halifax Parish: The old parish of Halifax was in fact the largest in England and covered something like 200 square miles. In the early days of the parish all local records and most other matters of importance were maintained by the Church Wardens. They were probably amongst the very few people who could write anyway. They must have been learned men of wide interests for they duly recorded weather, local events and natural history with great detail and accuracy. At the beginning of the last century many local affairs passed into more specialist hands and natural history matters became the concern of small but efficient local societies. These operated for about fifty years or so until the main scientific society was formed

about a century ago. Natural history recording became one of the main objects of this learned society, which naturally carried on recording for the area which originally formed the ancient parish. When I became responsible for the records for Lepidoptera, some twenty years ago, I was fortunate enough to find splendid details going back to about 1830. They had been maintained with very few gaps from 1861 onwards, and needed only to be kept in good order.

Present System: The local society appoints Recorders for the various Orders and once a year a report is given of species noted. These records are added to the existing details and anything of special interest is also reported to the Yorkshire Naturalist Union, our county society. I note any points of interest from the local press, and constantly receive information from many interested people. If something of unusual rarity is reported I take steps to confirm that the report is accurate, and make a point of never adding to the local list anything which is considered doubtful. This practice sometimes causes one to come into conflict with other parties but I believe that the great value in local records, particularly for future use, is in their being accepted with absolute confidence. On this point too I have insisted that vague records are of no use. We have all heard such comments as "Oh yes, I saw one of those a few years ago", to which one should counter "Well did you properly report it?". From a Recorder's point of view, if a creature was not properly reported it didn't exist!

Trends and results: If you are sufficiently fortunate to take over existing records and to add to them for a reasonable period, a most interesting picture begins to take shape. In my own records one can trace the

sad decline in local species which coincided with the building of mills and the onset of smoke pollution in the middle of the last century. During recent years — dare one say it — the very slight but welcome return of some species has coincided with the beginning of the efforts to reduce the evil effects of smoke and soot. Another interesting side-light on local species is to be able to compare the numbers reported with the variation in weather over long periods — the results of seasons following very severe winters or wet summers, for instance, may be examined. Perhaps the most interesting feature of the records is the rise and fall of insect populations over the years which they show, particularly with regard to the commoner species. Another fascinating aspect of recording is the following up of old records. I have been delighted on many occasions to prove that the Recorders of former days were quite correct when they reported a certain moth as being present at a particular place. Once I followed up an old record of a moth which was reported for a single field in Brighouse. It had not been seen in the district for over fifty years. It was very interesting to find that it was there exactly as the old Recorder had stated. Of course mistakes have taken place on occasions, or, again, a species which was present once may no longer be in the area, but in general it is amazing how often old records have proved to be correct in every detail.

It remains only to add that the actual methods of keeping records, such as card-index systems or annual books, vary from place to place and according to the inclinations of those responsible. The main endeavour must at all times be to maintain a clear, simple and accurate record.

W. E. Collinson, F.R.E.S. (247).

INSECT PESTS OF GARDENS — VII

Narcissus Flies

It is, perhaps, only correct to discuss *Narcissus* flies during what is, to the horticulturist, the bulb season. These flies are pests of bulbs, especially *Narcissus* bulbs, and are the most injurious of such pests that are found in England, with the possible exception of certain Nematoda (eelworms).

There are three species of flies which attack both indigenous and cultivated bulbs. All three species are more common where large concentrations of bulbs are to be found, and so are usually common in nurseries, especially if bulbs are forced there during the winter and the spent bulbs left lying about for the rest of the summer.

The most injurious of the three species is the Large Bulb Fly (*Merodon equestris* Fab.), which occurs in most districts in England and Wales and much of Scotland. The small bulb flies, *Eumerus tuberculatus* Rondani and *E. strigatus* Fall. are also very common, but tend to confine their attentions to *Narcissus* spp. only.

Merodon equestris attacks several species of bulbs, including *Amaryllis belladonna* Linn. (Belladonna Lily), *Galanthus* spp. (Snowdrops) and *Val-lota speciosa* (Linn.) Dur. et Sch. (Scarborough Lily), but mainly *Narcissus* spp. (Daffodils). It will be noted that the species attacked all belong to the same family as the Daffodil, the Amaryllidaceae.

The adult fly resembles a small, hairy bumble bee, and is about half an inch in length. The colour varies a lot, being whitish, yellow, brown or reddish, with or without darker bands. The unbanded forms closely resemble drone-flies (*Eristalis* spp.).

The larva is a typical dipterous form, being a dirty white in colour,

legless, and about half to three-quarters of an inch in length. The larvae may become stained brown owing to the decomposition of the bulb tissue in which they live. The last segment has a dark-coloured projection. The puparium is hard and dark-coloured, with the terminal projection visible.

The flies may be seen flying over beds of *Narcissus* spp., and even visiting the blossoms of shrubs and trees, during May and June. After pairing, the female lays her eggs singly, at the base of the foliage above the bulb, or in the soil near it, and on hatching the larva passes down into the bulb, where it feeds on the inner scale leaves until the centre of the bulb is destroyed. The shrinking of the dying foliage which is caused leaves an easy channel of entry to the bulb. An attacked bulb will be found to be filled with a dark brown, liquid mass, composed of frass and decomposed bulb tissue. Such bulbs may be capable of producing growth, but this growth is spindly, and usually lacks the dark green 'bloom' associated with Daffodils. When bulbs are being lifted, damaged ones should be sorted out and destroyed by burning.

The small narcissus flies are very much smaller than the Large Bulb Fly, being only a quarter of an inch long, and resembling hover-flies. The ground-colour of the body is black, with a series of white marks along the side of the abdomen. The thorax is metallic green.

The larva is again typical of the Order, but has a reddish projection at the end of the body. Several maggots are always found in one bulb, and sometimes in the same bulb as the larvae of *Merodon*. The puparium is whitish.

There may be up to three generations per year, and both (all) species overwinter as larvae.

The best control of maggots in

the bulbs is by immersing the bulbs in water at 110°F for one hour. The temperature of the water must not fluctuate. A heavy dusting of D.D.T. on the soil in June will kill most of the young maggots and egg-laying females, and incidentally every other insect, pest or predator, that comes into contact with it — food for thought!

8.12.63.

A. J. Tuton (2639).

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BREEDING VARIETIES OF THE LIME HAWKMOTH

Last year I found several larvae of *Mimas tiliae* Linn. (Lime Hawkmoth) at St Albans, Hertfordshire, and decided to breed some imaginal varieties from them, as I had heard that this could be done by subjecting the larvae to suitable temperature and humidity changes. Half of the larvae I put in a warm, dry cupboard, and the remainder I put in a wooden breeding-cage which was placed out of doors so that the occupants were in full sunshine for half of the day and in shade for the rest.

As many Members will know, this species is particularly vulnerable to 'waterlogging', so I had to place fresh leaves on the bottom of the cages every day. The larvae grew to a fair size and then pupated.

The larvae in the cage out of doors had endured all the wind and rain of the summer of 1962, but those reared indoors had been warm and dry. After three weeks I dug the pupae up and placed the ones reared outside in the above-mentioned cupboard, and those bred inside I put on a cold, draughty window-sill.

I had been rather fortunate with the larvae, losing only one of those reared outside and two of those reared inside the house. I was not so lucky with the pupae, however,

and four that were kept on the window-sill and three kept in the cupboard died. The remainder, twenty-seven in all, 'hatched' the following April.

The specimens kept on the window-sill as pupae and in the cupboard as larvae emerged as very dark moths. The hindwings were black, and the forewings a slatey-grey instead of the normal buff colour. The dots were normal size and a deep shade of brown. The outer parts of the forewings, instead of being a pastel shade of green, were deep olive all over. The body had the normal colouring. These moths were indeed quite striking. Unfortunately, the black colour fades after a few months if exposed to light, and becomes a deep chocolate-brown. Two of the above-described specimens I exhibited at the last AES Exhibition. I have now got a second brood, from pairings between specimens of this dark form, the members of which are in the pupal stage at the time that I write this article.

The larvae which had been reared out of doors gave rise to moths which were near opposites of the above variety, being of a very light shade. The hindwings were an extremely delicate shade of cream with the veins outlined in the normal colour. The forewings were also light in colour, but their tone was not so vivid. The dots were small and a very light shade of brown. The dot nearest the inner margin was minute—in fact, some specimens lacked it altogether! The outer part of the forewing was of the normal colour, but this appeared cloudy and, on examination under a microscope, the wing showed a liberal scattering of buff scales, buff being the normal background colour. These specimens I also exhibited at the 1963 AES Exhibition, but I failed to obtain fertile eggs from them even though four pairs mated. Several

specimens from each 'section' of the experiment emerged as normal moths with no variation whatsoever.

I hope that this article will tempt other Members to try this type of experiment for themselves. I hope they will be as successful as I was, and I would be pleased to hear of their results.

4.12.63.

L. A. Wright (3434J).

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HYBRID: LAOTHOE POPULI LINN. X SMERINTHUS OCELLATA LINN.

This year I have succeeded in rearing this rewarding cross which was first named *Smerinthus* hybr. *hybridus* by Stephens.

To conduct this experiment I had equipped myself with thirty pupae of *Laothoe populi* Linn. (Poplar Hawkmoth) and thirty pupae of *Smerinthus ocellata* Linn. (Eyed Hawkmoth). For cross-pairing these two species, a male of *S. ocellata* is placed with a female of *L. populi* in the same cage. It is also necessary to confine a female of *S. ocellata* in a separate cage placed nearby. This female stimulates the male of her own species, but he can only gain access to the female of the other species. One difficulty is that the moths of *L. populi* usually emerge slightly before those of *S. ocellata*. To prevent the two species 'missing' each other I artificially heated the pupae of *S. ocellata* to bring them on about one week ahead. This was successful in bringing both species out at the same time, so that no chances were lost in trying to cross them. Between 1st and 8th June 1963, Mr Peter Ashdown (2823J)—whom I thank for his assistance with the pairing—and I succeeded in

obtaining four pairings between males of *S. ocellata* and females of *L. populi* (and also two vice-versa, but such pairings are always infertile). After pairing, the females were transferred from the cages to laying-boxes, where each laid about 150 ova. The four batches of eggs were kept separately in plastic boxes, and within a week or so three batches had dried up, leaving the remaining batch of 113 ova which continued to develop, and the larvae commenced to hatch on 13th June and continued to do so right up till the 20th.

Foodplant was another problem as none of the text-books gave the foodplant to use for the hybrid larvae, but I decided on Lombardy Poplar (*Populus nigra* Linn. var. *italica* Duroi), which the larvae took to at once and continued to thrive upon throughout their growth, which took thirty-four days. The appearance of the hybrid larvae is as follows:

First stadium

In overall appearance they resemble larvae of *L. populi* but in their attitude they are like those of *S. ocellata*, although it is evident that their characteristics are a mixture from both parent species. One noticeable feature is the caudal horn which is the same as that of larvae of *L. populi*, being pale pink, whereas in *S. ocellata* larvae it is almost black. My specimens made skin-changing preparations on 18th to 21st June.

Second stadium

After their first skin-change they are more like the larvae of *L. populi* but their bodies are pale and are never so rough or as green as in Poplar Hawkmoth larvae. The first abdominal stripe is never more prominent than the others, which are white, not yellow. The head is like that of larvae of *L. populi*, being rounded at the top.

Third stadium

In the third stadium their appearance is intermediate between that of larvae of *S. ocellata* and of *L. populi*, although they do seem to be rather more like the latter.

Fourth stadium

The appearance of the larvae is still intermediate between that of the two parent species. They are not as heavy-looking as *L. populi* larvae and are slightly whitish.

Fifth stadium

By July most of my larvae were in their last stage. Their appearance, however, is now more like that of larvae of *S. ocellata* and becomes more so as they increase in size. The caudal horn also changes to bluish as in that species. When fully fed they are hardly distinguishable from true *S. ocellata* larvae.

To sum up their appearance throughout their growth, it could be said that they look at first rather like the corresponding stage of *L. populi*, then become intermediate between the larvae of the parent species, and finally look like larvae of *S. ocellata*.

The first two larvae went down into soil on 15th July. From the one hundred larvae that I had started off with, I now had thirty-one pupae. The larvae varied in size, although the main group grew normally and finally pupated, but this still left me with about twenty other larvae that were very poorly and were in the second or third stadium. These unfortunately died, as they did not make any headway. One unusual thing happened in the fourth stadium. This was the occurrence of five white larvae, and these might be described as 'ghostly'. Four of these pupated and I still have these four pupae as they have departed from the usual habits of the hybrids and are overwintering: they are far more glossy

than the normal hybrid pupae, and chestnut in colour. They are very wrinkled, but it is just possible to tell that two are males and two females.

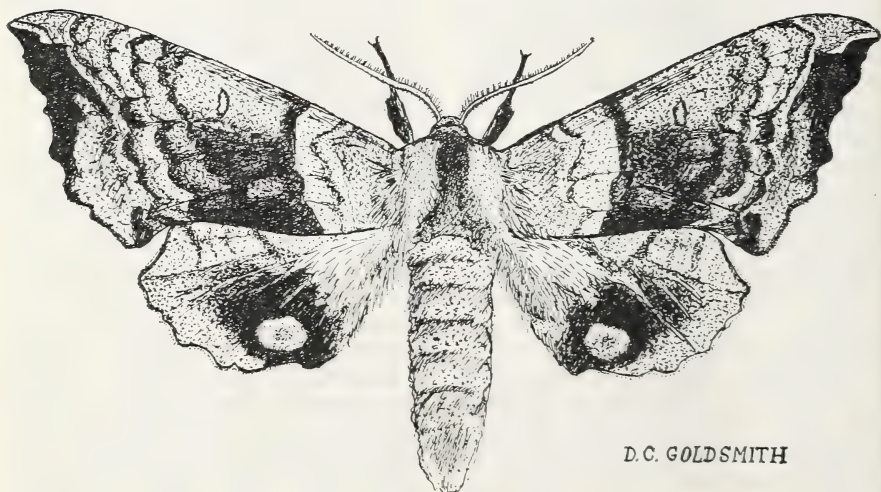
The pupae of the typical hybrids are very much like those of *L. populi*, but are not so rough. They have not the glossy finish which those of *S. ocellata* possess, although they are somewhat greasy. Their colour is very dark and in shape they resemble the pupae of *S. ocellata* especially in the wing-cases. The chitin is thin, this being shown by the very many scars and wrinkled 'skin' of several pupae. One of my hybrid pupae was still soft and green even a week after pupation. This remarkable pupa died, however, but if it had lived it would have been very interesting to observe the development under the transparent 'skin'.

The first moths emerged on 11th

August 1963. They 'hatch' during the night as do the imagines of *S. ocellata*, and their resting position is like that of *L. populi*, with the costa of the hindwings protruding beyond the costa of the forewings. The imagines easily lose their foothold and fall to the floor.

I had some imagines of the second brood of *L. populi* emerging at the same time as the hybrids, and one morning, on 15th August, I was surprised to find one of the hybrids pairing with a female specimen of *L. populi*, but unfortunately the resulting ova were infertile.

The hybrid imagines, from a non-scientific view, have the forewing markings of *L. populi* although the markings are dark. The hindwings have the rust-red patch of *L. populi* and the blue eyespot of *S. ocellata*. The eyespot is, however, not centred with black. The area surrounding the eyespot is suffused with black,



D.C. GOLDSMITH

Smerinthus hybr. hybridus Steph.

which merges into the red patch and into the brownish ground-colour. The top of the hindwing from the outer margin and along the costa is grey marked with a few wavy bands. This is characteristic of true *S. ocellata* imagines. The underside has the markings of *S. ocellata* and the colouring of *L. populi*. Wing outline is more like that of *L. populi* than that of *S. ocellata*, but is never so notched. In my collection I have four specimens which are very pink, and these might be classed as pink varieties. The body has the grey fur of *L. populi* and there is a dark band on the thorax as in *S. ocellata*, although this band is somewhat weaker.

There seems to be some argument as regards the sex of the hybrid imagines. In Tutt's '*British Lepidoptera*' volume 3, under *Smerinthus* hybr. *hybridus* there are several accounts of the hybrids being gynandromorphous. I have also heard accounts of the hybrids being normal males and females, with the latter very uncommon. My hybrids appear to be males as did the pupae from which they emerged.

On the setting-boards the hybrids present a new problem. This is the amount of grease in their bodies and on their wings, even at this stage. They seem to contain a large amount of fat in their abdomens, which is not removed until the moths are treated with carbon tetrachloride or another suitable degreasing-agent. All the grease left my setting-boards in a proper mess.

This article is one of a number that I hope to write about hybrids between species of the Sphingidae. I hope this article will encourage and assist other Junior Members who are thinking of rearing *Smerinthus* hybr. *hybridus*.

23.10.63. D. C. Goldsmith (3483J).

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THE ELEPHANT HAWKMOTH

This large and showy species (*Deilephila elpenor* Linn.) has now firmly established a colony in Poynton, Cheshire, due to my efforts to introduce it.

It was February when I buried some pupae where the foodplant, Rose-bay Willow-herb (*Chamaenerion angustifolium* Linn.), had been growing the previous year. In May the moths emerged and paired. The following notes might be useful to any Member who is thinking of breeding Elephant Hawkmoths.

Ovum

The pearly green egg hatches any time from ten to eighteen days after it has been laid.

Larva

The tiny greenish-grey newly hatched larva has a 'tail' longer than its body and must be handled with great care, as it clings tenaciously to the first thing with which it comes into contact. After the second moult the eyespots show clearly on the green, rough skin. The third moult proves extremely interesting as some larvae stay green and some change to dark brown. I would welcome any explanations for this. After the fourth moult, which is *sometimes* the final one, the larva is black, and is velvety to the touch. Just before pupating the larva becomes extremely restless. I once found a larva upstairs and another going out of the back door, both larvae being some twenty yards from their cage. The larva constructs a flimsy cocoon from silk and bits of rubbish, which is attached to lumps of soil and to moss growing on the surface of the ground.

Pupa

This is black and cream and is very rough to the touch. The pupa likes moisture so it should be placed between two layers of moss in an airtight jar, which should be kept

in an outhouse or shed.

Imago

When freshly emerged the Elephant Hawk is one of the most beautiful British moths, being deep pink with olive green and black, and trimmed with white. It emerges in the early morning and is not 'dry' till about 5.30 p.m.

During the first three stages the species likes moisture, but has a tendency to drown, especially in the larval stage.

1.1.64. S. H. Church (3626J).

[Mr Church's address is: "Westbury Hotel", London Road South, Poynton, Cheshire — Ed.]

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PARASITES IN THE WHITE ERMINE MOTH

Of thirty-five caterpillars of the presumptive species *Spilosoma lubricipeda* Linn. (White Ermine Moth), collected in two localities in Ealing, twenty-four were subsequently found to be parasitised. The caterpillars fed normally until the final instar, when they ceased to feed, became very restless and eventually either spun a typical cocoon or collapsed in a flaccid condition. The parasitic larvae could usually be seen moving within the limp bodies of the collapsed caterpillars. In each case, the parasitic larvae left their host within a few days. The emergence of these from each individual caterpillar was observed to be as shown in Table 1.

Number of parasites per caterpillar	Number of caterpillars producing	
	Large pupae	Small pupae
1	3	2
2	2	2
3	4	7
4	—	2
5	—	2
Average	2.1	3.0

Table 1: Emergence of parasites from larvae of *Spilosoma lubricipeda*

Two types of parasite pupae were distinguished (a large and a small type) with possibly different characteristics; although it is appreciated that the number of different parasitic species which may be involved is unknown at present. It is not easy to ascertain if the difference in pupal size has any special significance, such as might arise from variation in size of the host (this was not apparent — all the caterpillars were large) or from number of parasites per host (it is interesting to note that none of the large pupae were derived from a host with more than three emerging parasites).

The pupae may be had by anyone interested in identifying the species involved or in the phenomenon of parasitism.

5.10.63.

Roy Robinson (3201).

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THE CUMULATIVE EFFECT OF MERCURY-VAPOUR LAMPS

The alarm that was felt by many entomologists and conservationists at the introduction of the mercury-vapour lamp as a means of attracting and trapping night-flying moths was, in my opinion, well merited. In the observations and comments which follow I want to reiterate some of the objections and fears already voiced and to add some other points which may have been overlooked.

My first introduction to the 'm.v.' lamp was immediately after the last war when my father-in-law, who lived in Haywards Heath, Sussex, began to produce large numbers of moths which he had taken at the street-lights outside his home on a new housing estate. He was aware of my interest in this and made a habit of picking up moths which settled on or

near the lamps outside his front gate. I was puzzled by the numbers and by the fact that many of these moths were ones which I had always considered to be uncommon or rare. They included such species as the Lappet (*Gastropacha quercifolia* Linn.), the Pine Hawkmoth (*Hyloicus pinastri* Linn.), the Lobster (*Stauropus fagi* Linn.), the Striped Hawkmoth (*Celerio livornica* Esp.) and most of the 'prominents' (Notodontidae) and the 'footmen' (Lithosiinae). I then discovered that the lamps were of the mercury-vapour type and spent several evenings myself patrolling the street and examining the moths which were attracted to the lamps in hundreds. I was not the only predator. A small army of bats swept in amongst the swirling moths, reaping an indiscriminate toll, much larger than my own sampling. Those moths that struck the ground were in considerable danger of being crushed by passing traffic or feet but an even greater danger was the small group of local felines whose members prowled about the bases of the lamp-standards pouncing upon and eating the larger moths as these landed. I was witnessing what was little short of a wholesale massacre of the local moth population. The old street-lamps probably caused some loss of moth life in earlier years but this huge concentration of moths had attracted more than human interest, and destruction on a vast scale was in progress. A further consideration was that these moths, a large majority of which were males, were spending those hours during which they should have been about their matrimonial duties in gallivanting about the bright lights.

My fears in regard to these street lights were correct, for the moth population declined very quickly over the years and now one seldom sees other than the odd moth at these lights. The same observation holds

good for the Cockchafer (*Melolontha melolontha* Linn.) which were so numerous when the lamps were installed. I would deduce that mercury-vapour street-lighting is almost fatal for the local moth population — something which should be pointed out to local authorities when they are planning to install street-lights in rural areas.

The light-trap

The first use of the 'm.v.' lamp by an entomologist which came to my notice was that by an AES member at Brighton, Mr R. Dyson (91), who had adapted a high-powered 'm.v.' street-lamp so that it could be operated from his bedroom window looking out over Hollingbury Hill. He was able to attract swarms of moths with this apparatus and later he procured a smaller unit which made it possible for him to carry the lamp and run it from A.C. mains supplies at various spots, such as outlying farms on the South Downs, where the lamp was stood in the centre of a large white sheet and moths were boxed or netted as they came to the light. Later I purchased an 80 watt 'm.v.' lamp for my own use and operated this in my garden at Brighton, only using it when I could stand nearby to net or box specimens. I noticed that both cats and bats began to associate the lamp with the moths and were present very shortly after the light came on. Alice (in Wonderland) posed the question "Do Cats eat Bats?" — I do not know the answer to this, but it is certain that both of them eat moths. My attempts at attracting moths at Brighton were fairly sporadic and I was not able to observe any fall in the moth population there.

In 1956 I moved to Middlesex and in 1959 became the owner of a standard 'Robinson' mercury-vapour light-trap with a 120 watt bulb. I began to use this systematically in the back garden as a means of assessing the density and nature of the moth population. There seemed to be very

few bats in the area and cats were not common as my house is fairly remote from others. The chief predators on the attracted moths here were House Sparrows (*Passer domesticus domesticus* Linn.), and at times, Blackbirds (*Turdus merula merula* Linn.). Very quickly they became aware of the lamp and its association with the moths. On several mornings I found that one of these birds had entered the trap and I was faced with a frightened Sparrow and a pile of moth wings when I opened the trap. An open wire mesh, large enough for moths to pass through and sufficiently fine to prevent Sparrows from entering, was placed over the lamp and trap entrance, but by rising early I observed that the Sparrows and Blackbirds still congregated round the trap, taking all those moths which had settled in the vicinity of the trap, and waiting, too, for others to escape into their waiting beaks. Further, as soon as I opened the trap they seized any moth which flew, and it became impossible to release any moths until the next evening when the birds had gone to roost. It became obvious to me both that I was ensuring that a large number of the local moths were being devoured unnecessarily by the birds and that I was interrupting the normal mating arrangements of these night-flying species. A decline in numbers and species became apparent and in 1962 I found that the numbers of moths taken were less than half of those caught in the first year's trapping in that area. This year (1963) I have only used the trap for one night in each fortnight and this has ensured that I do not interrupt the lives of the moths (or those of my family!) too much, and the birds have not got into the habit of waiting for a free meal each morning.

I feel it would be safe to say that the only proper way in which one should use the 'm.v.' trap is to see

that the time intervals between nights on which the trap is used are long enough to ensure that predators do not form a habit of visiting the light. This only applies to a trap operated in a fixed situation. I can see no objection to the nomadic or peripatetic trapper, provided that he does not take more than a sample of any local or rare species. The danger of several collectors light-trapping in known localities for rare species during the peak periods of emergence of those species cannot be ignored and in such circumstances the 'm.v.' lamp can be the cause of the extinction of such species. The portable generator has made this a very real danger and one can only hope for restraint and common sense amongst nocturnal lepidopterists.

1.9.63.

P. W. Cribb (2270).

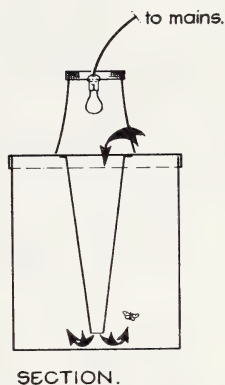
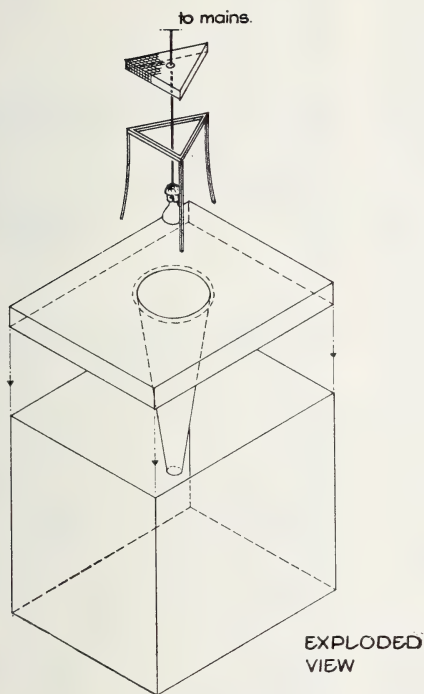
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A SIMPLE MOTH-TRAP

The construction of this moth-trap is very easy and can be readily accomplished within an hour providing the necessary articles are to hand.

The necessities are: a large cardboard box and another large piece of cardboard, a tripod, a piece of wire gauze, a length of flex, a 100 or 200 watt bulb, and a bulb-socket.

Firstly take any suitable cardboard box for the main body of the trap (I used a 'Corn Flakes' carton measuring 18" × 11" × 13", and cut off the four flaps on top). Secondly construct a lid, from another piece of cardboard, that fits tightly on to the box. In the middle of the lid cut away a circle of diameter seven inches. To fit this make a paper or cardboard cone that ends in a diameter of two inches and



about one or two inches above the floor of the box. Fixing the larger end of the cone is done by overlapping it round the rim of the cut circle and then stapling. All round the top inside edge of the box a flap of one inch in width may be fixed to prevent moths crawling up the sides and out at this point. This is optional and is quite unnecessary if the box has a tightly fitting lid.

Now paste white paper all over the lid and down the cone so that extra reflection is given off. A tripod has to be obtained and on to the top of this a piece of wire gauze, with a hole in the middle wide enough for the flex to pass through, is fitted. This gauze is used merely to centralise the bulb over the cone.

Some broken-up pieces of egg-trays are placed in the bottom of the box so that the moths will not fly madly around in the morning. The last thing to do is to put the flex through the tripod, after once winding it round a tripod leg to prevent slipping, fit the bulb into the socket and turn on the electricity.

It will be found that after a year or so, depending on how many rainstorms there are, the cardboard box will become flimsy and will eventually collapse. It is easy to construct another in an hour.

The disadvantages of the trap are: a bulb of 200 watts will get hot and any rain on it will break it. I have used a 100 watt bulb and although this has been in countless rainstorms

it is none the worse. The only other disadvantage is that the trap may be blown over in very high wind but this can be mastered by anchoring the trap down with bricks inside.

The trap is very efficient. It is designed for the younger generation or the beginner but ultimately a mercury-vapour light-trap is desirable.

The light will attract most of the commoner moths. The usual haul for one good night in the summer months may be between 50 and 80 specimens, with better results from a 200 watt bulb. Many different species have been caught in the trap. 7.1.64. John S. E. Feltwell (3618J).

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VOLUCELLA ZONARIA PODA

I was interested to see in the November 1963 *Bulletin* (*Bull. amat. Ent. Soc.*, 22: 140) that Mr H. V. Danks finds *Volucella zonaria* Poda common in his part of N.E. Surrey. I have never been fortunate enough to see this handsome insect very often. I have seen it in Surrey on Wimbledon Common (in 1948 and 1951) and it is probably well-established on that common as other observers have also recorded it there. Several specimens also turned up in my small garden in a built-up part of South Norwood in 1955. Elsewhere I have only taken it in East Kent, at Lower Halstow, Upchurch and Hartlip, in 1960.

While rambling over the East Surrey chalk hills during past years (admittedly more 'botanising' than insect collecting) I have not noticed this fly and I wonder whether it has, in some indirect way, a dislike for the chalk. Colyer and Hammond (1951) state that it has been bred out of the nests of the Common

Wasp (*Vespula vulgaris* Linn.). I wondered whether it occurred on Wimbledon Common in the nests of the Hornet (*Vespa crabro* Linn.), which was somewhat frequent there and which *Volucella zonaria* closely resembles. Colyer and Hammond state that *Vespa crabro* is the host for *Volucella inanis* Linn., a similar but smaller fly. (Macquart (1834) gives *V. inanis* as a variety of *V. zonaria*.) *V. inanis* I certainly meet with a little more frequently than *V. zonaria*. *V. inanis* is usually only seen during one fortnight each year (my records extend from 22nd July to 30th August) whereas my few records of *V. zonaria* extend from 5th July to 27th August. I have recorded *V. zonaria* as visiting the flowers of Field Thistle (*Cirsium arvense* (Linn.) Scop.), Bramble (*Rubus fruticosus* Linn.), *Buddleja davidii* Franch., and garden Privet (*Ligustrum ovalifolium* Hassk.) and have recorded *V. inanis* on the flowers of Field Thistle, Bramble, common Ragwort (*Senecio jacobaea* Linn.), Wild Angelica (*Angelica sylvestris* Linn.), Hogweed (*Heracleum sphondylium* Linn.), hairy Water Mint (*Mentha aquatica* Linn.) and Gypsy-wort (*Lycopus europaeus* Linn.).

For those Members who are not familiar with these two drone-flies an excellent colour photograph of *V. zonaria* appearing in Byerley (1962), and a colour drawing of *V. inanis* in Colyer and Hammond might be mentioned.

When I first started collecting in 1947 the only reference I could find to *V. zonaria* was that of Verrall (1901) where, under the heading "Reputed British Syrphidae", he says "*Volucella zonaria* Poda was included in the Entomological Club collection by two specimens said to have been captured in the New Forest, but I noted in the Entomologist of February 1870 that the specimens have been removed from

the British collection." I wonder whether the collector was ever vindicated!

1.1.64. A. W. Jones (1061).

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INSECTS, FOODPLANTS, AND PLANT-RELATIONSHIPS

A few years ago, in the Jubilee Number of this *Bulletin* (Airy Shaw, 1960), I made some remarks upon certain aspects of the foodplant-pattern found amongst British butterflies, and indicated that later it might be possible to discuss examples from other groups. In the present and succeeding notes I shall hope to do this, and regret that these projected sequels have been unduly delayed.

1. *Buddleja* and *Plantago*

I am putting these two genera together because the food-habits of certain insects suggest that both genera are probably related to the same well-known plant family, though as it were from different directions.

Almost every garden-lover must be familiar with the showy *Buddlejas* so beloved of vanessid butterflies in the late summer. (By the way, don't worry about the spelling: the 'j' is correct, as originally used by Linnaeus, but the word can still be pronounced 'Buddleya', as it was by him.) The best-known species are *Buddleja globosa* Hope (introduced from Peru about 1775), with its golden-yellow balls of flowers, and *B. davidii* Franch. (introduced from western China more than a

century later), with its handsome purple spikes. The genus is one of several that used to be consigned by botanists to a 'rubbish-heap' family known as the Loganiaceae. Recently (see Hutchinson, 1959, pp. 370-7) this family has undergone a much overdue dismemberment, but already been segregated fifty years *Buddleja* and some related genera had previously by some workers as the separate family Buddlejaceae. Even so, however, the true affinities of the genus *Buddleja* have remained far from clear, and no botanist has yet ventured to remove the Buddlejaceae from the immediate neighbourhood of the fragmented Loganiaceae, with which it still forms an ill-assorted conglomeration.

Following the introduction of the *Buddlejas* to our gardens, certain members of our native insect fauna were not long in discovering that a diet of these plants was quite to their liking. These insects were moths of the genus *Cucullia* and weevils of the genus *Cionus*. (cf., Daltry, 1944; Scott, 1944; Airy Shaw, 1944-56-58; Woollatt, 1944.). Now, the native foodplants of these insects are, of course, *Scrophularia* spp. (figwort) and *Verbascum* spp. (mullein), which belong to the large and well-known family Scrophulariaceae. (We have no native Loganiaceae in Britain; the nearest relatives of this family here would perhaps be the gentians and bedstraws.) There would therefore seem to be a *prima facie* case for assuming that some real relationship must exist between *Buddleja* and the Scrophulariaceae. I myself have not yet been able to go more fully into this question. Outwardly *Buddleja* resembles some of the Verbenaceae — another large and widespread family — but I have every expectation that it will be found that the insects have given us the clue to its true affinity. This is especially probable, since the

attachment of the *Cucullia* and *Cionus* species to *Scrophularia* and *Verbascum* in this country is apparently a rigid one, without alternatives, though Scott (1944) notes instances in which cultivated members of the genera *Phygadeuon* and *Celsia*, of the same family, have been attacked.

The plantains (Plantaginaceae) constitute another group whose precise affinities have caused botanists a good deal of perplexity. They have usually been placed, as a kind of appendage, right at the end of the big block of gamopetalous families (Tubiflorae, Bicarpellatae, etc.), often following the Labiatae, to which they bear remarkably little resemblance.

Readers of the *Bulletin* will remember some notes published a few years ago by Mr P. W. Cribb (Cribb, 1956, 1957; also Airy Shaw, 1956), in which he discussed the foodplants of the fritillary *Melitaea athalia* Rott. (Heath Fritillary). These notes interested me very much. The foodplants were species of the genera *Melampyrum* (cow-wheat), *Digitalis* (foxglove) and *Veronica* (speedwell) — all belonging to the Scrophulariaceae — and species of *Plantago* (*P. lanceolata* Linn., *P. major* Linn.).

At about the same period, an interesting note appeared in the *Entomologist's Monthly Magazine*, (Drummond, 1956; see also Airy Shaw, 1958), in which it was reported that certain beetles of the family Chrysomelidae — *Chrysolina crassicornis* Hell. and *C. haemoptera* Linn. — had been found to feed upon species of *Linaria* (toadflax) (Scrophulariaceae) and of *Plantago*.

More recently, Mr A. A. Allen (1960) has drawn attention to the fact that weevils of the genera *Gymnetron* and *Mecinus* are attached to *Veronica* spp. (Scrophulariaceae) and — again — to *Plantago* spp.

The botanical significance of all this evidence is inescapable: the

closest relationships of the plantains are evidently with the Scrophulariaceae. To me this is especially interesting, in that it confirms a conviction that I had reached independently many years ago, simply on the ground of external *facies*, in the course of routine herbarium work at Kew. The general appearance of a plantain inflorescence, with its small tetramerous corollas and exerted stamens, is often very reminiscent of a spicate inflorescence of *Veronica* — one of the very genera mentioned in the above notes. The possibility of simultaneous relationships in other directions is, however, not excluded; for the well-known palynologist Erdtman (1952, p. 324) has found that the pollen of *Plantago* spp. differs from that of most Scrophulariaceae and shows resemblances to that of certain centrospermous families (Caryophyllaceae, Chenopodiaceae, etc.) — itself a fact full of far-reaching consequences for the botanist — but that is another story. The complexity of the inter-relationships of living things is a part of their endless fascination.

27.12.63. H. K. Airy Shaw (545).

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THE AES

In 1954 I decided to join the AES, as from it I expected to be able to obtain more information than I otherwise could in the space of time I then had available.

Shortly after I had joined the Society, Mr D. Ollevant started the 'Micro Group', and as my interests lay in this direction I joined at Mr Ollevant's invitation. All Members will be familiar with the circular bulletin idea, and it was when I first received mine in the normal circulation, and made my first notes in it, that my horizons widened. For the first time I was in contact with really keen Members whose experience far out-weighed mine.

The notes I made in the *Bulletin* brought in letters and I soon had a small but continuous flow of correspondence to reply to. Once I was in contact with other Members, entomology became more exciting and interesting, and with increased interest came more correspondence in a 'snowball effect'. From then on I really found life interesting.

The Exhibitions had the same effect as the correspondence, and the two or three introductions made during the first Exhibition were old friends at the second, and so on. It is now my privilege to know a fair number of Members. Some I have never met and probably never will but they are counted as friends just the same.

The simplicity with which contact can be made, the fact that the more you put in the more you get out, and that indefinable feeling of belonging to a large extent spell AES and I am proud to be part of the Society.

The Society has now been running for over twenty-five years with remarkable smoothness, and that this has been possible is no small accom-

plishment on the part of successive Councillors and helpers. In addition to this the Society has published meaty, scientifically accurate leaflets and handbooks at very low cost. The 'cost to quality and quantity' of these represents the best value for money in Britain today. Indeed, the bibliography in many books refers readers to AES literature; solid evidence of quality in AES publications.

Unfortunately it is not possible for any organisation to run indefinitely without some kind of major trouble sooner or later, and I personally feel that this time has now come. We seem to have difficulty with the '*Bulletin*', '*Wants and Exchanges List*', and in finding suitable people in the right geographical areas to do those jobs which must be done. I also believe that there is no 'instant answer' to our problems.

It is to be expected that, at times like these, the 'faint hearts' and 'I for me only' types will drop out and our Membership will decrease. This does not bother me personally and the only effect on the Society will be to reduce income from annual subscriptions. What does bother me is that potentially good Members who can't see any way of helping may leave from sheer desperation, and it seems that if this happens then we are in trouble.

To the latter group may I make one or two suggestions:

- (1) Pick up your *Membership List*, select three Members and write a letter to each of them. Give details of your collection, your pet ideas, your interesting experiences and quote me by way of introduction.
- (2) Write for the *Bulletin* a list of three articles which you would like to see and send in a contribution of your own. A note,

a comment on your collecting, or a short article on an idea you have tried out (be it a success or failure), will be welcome.

- (3) Do not worry about your spelling, as mine is awful, just ask the Editor!

If you dare to do as I suggest you will be well on the way to a realisation of what the AES can do for you.

In summarising, I, as an ordinary AES Member, ask you as a fellow Member to support the Society and help see it through this period of re-adjustment. Don't give up because things are not as smooth as we all would like them to be. Sit and think and you will realise that running the AES is no small task.

I believe we have a unique Society which has helped a lot of people, is helping people and can help a lot more.

From an entomological viewpoint, the AES is the best thing that ever happened to me. It can be the same for you if you let it.

20.12.63. M. E. Castle (2490).

[Mr Castle has recently moved. His address now is: 172 Greenfield Crescent, Hazelton Gardens, Horndean, Hants. — Ed.]

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BY ANY OTHER NAME...

The reprinting of past articles on the subject of correct nomenclature, together with the comments of Mr P. G. Taylor (719) on the inability of entomologists to 'grow up' and use scientific names for insects and other living things (*Bull. amat. Ent. Soc.*, 22: 87-8) must draw some response. I would like to add my own observations.

Scientists are not the only people

interested in our country's natural history, and the people who have a fringe interest are a majority. Such persons are able to identify the commoner and more easily-identified members of the flora and fauna of the countryside, and these objects have earned a name in the vernacular. Those who are led or drift into the study of natural history start off with a vocabulary of names, and the early naturalists extended the use of the vernacular to the less well-known species. It is, in my opinion, essential to retain common names for the better-known species, not only in order to communicate with interested laymen but in order to attract the uninitiated into the realm of natural things. For these two ends, I, for one, will never 'grow up'. The attempt of some to extend the use of common names by making up names in the vernacular for those species which at present have none is to be frowned upon unless the purpose for so doing is to bring such species to the notice of the public at large or to the people with fringe interests. The naming of 'The Colorado Beetle' was essential to successful propaganda and its scientific name (*Leptinotarsa decemlineata* Say) would have been too big a mouthful for the purpose. When we have to coin names for such a reason, let the name be instructive and easy on the tongue. I agree that such names as the 'Bright-line Brown-eye' are linguistically ugly and are little help in identification, and with such an insignificant insect the scientific name (*Diataraxia oleracea* Linn.) is sufficient for our purposes.

The arguments in favour of the use of the scientific name of a species have been explained before in the *Bulletin* but the confusion which exists in the field of nomenclature is a discredit to those responsible for the naming systems, and certainly it

seems that the vernacular names have more stability than the names of the scientist. I will quote a few examples of the difficulties that lie ahead for the person who wishes to use only scientific names when speaking of insects. I realise that there are reasons for the alteration of names but there seem to be very much better ones why a name which has been satisfactory for a quarter of a century should not suddenly be found to be inadequate [see footnote]. Amongst our native species, many alternative names for the same species are in use in different text-books while the reference books dealing with continental and foreign species are so confusing that in the field, while collecting, we have resorted to coining names ourselves to be sure that we are speaking about the same species — the reverse of what was intended. Let us consider the names of some of the *Lycaenidae* ('blues'). Our Brown Argus Butterfly, the name of which I learned as *Lycaena astrarche* Bergstr. has now become *Aricia agestis* Schiff. This change of the name of genus and species becomes more confusing when we find that some names have been switched from one species to another. In the 'blues' which inhabit the very high ground of the Alps (7,000 ft) there are two species which I learned as *Lycaena pheretes* Hoffmansegg and *L. orbitulys* Esp., but I now find that the latest text-book (Forster and Wohlfahrt, 1955) calls them respectively *Albulina orbitulus* Prun. and *Agriades glandon* Prun. so that the specific name of one has become that of the other. Turning to other groups, we find in the *Satyridae* a completely new list of generic names so that our Meadow Brown Butterfly which was *Epinephele janira* Linn. has now become *Maniola jurtina* Linn., while in the *Nymphalidae* did you know that the Dark Green Fritillary should no longer be called

Argynnis aglaia Linn., but it should be *Mesoacidalia charlotta* Haw., and that the name of the High Brown Fritillary has been changed from *Argynnis cydippe* Linn. to *Fabriciana adippe* Rott? Can you wonder that some of us prefer to speak of the Clouded Yellow Butterfly instead of *Colias croceus* (or is it *crocea*?) Fourcr. which when it first flew into my net was called *Colias edusa* Fab?

P. W. Cribb (2270).

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[It seems ironic that the retention of long-used names in preference to older ones which are strictly valid according to the Law of Priority, should on the one hand be welcomed by many because this preserves the names which are familiar, yet on the other makes it so much more difficult for a stable taxonomy (of 'oldest' names) ever to be established — Editor.]

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STUDY GROUP IN LEPIDOPTERA GENETICS

A meeting of the Group was held during the afternoon of the Annual Exhibition 1963. About fourteen Members and visitors attended. A short account was contributed, by Mr B. O. C. Gardiner, on the result of crosses between *Pieris brassicae* Linn. type \times race *cheiranthi* Huebn. — F_1 and F_2 generations and a backcross to *P. b. cheiranthi*. The variation of wing colour and markings appeared to be polygenic in nature. This variation appeared to be paralleled by the characteristics of the larvae. Mr Gardiner's results were then discussed by several Members.

The meeting was subsequently thrown open for general discussion. Several principles of genetics were raised and their application to Lepidoptera genetics provoked serious discussion. The sort of work which the Group could undertake also came in for consideration and the need for mutual assistance was stressed. Two species (namely, *Pieris brassicae* Linn. and *Arctia caja* Linn.) appeared to attract attention as offering scope for genetic investigation. Members interested in genetics are invited to join the Group.

9.10.63. Roy Robinson (3201).

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SHEER LUCK !

How often has a collector felt that the day's high spot had depended not on skill, experience, or patient search, but on some happy chance — the luck that, for no particular reason, one happened to look over a hedge; to choose a certain tree under which to have a snack; or to make some other casual but fortunate decision?

There were two ponds, one on each side of the road. The one was small, dismal-looking, tree-girt; the other was fairly large, its surface graced with Frogbit, (*Hydrocharis morsus-ranae* Linn.), Starwort (*Callitriche* sp(p).), and *Potamogeton* sp(p)., the bank readily accessible all round save for some clumps of reed (*Phragmites* sp.). Naturally, I chose the open, weedy pond, and a glorious piece of water it proved. Water beetles were what I was seeking, and their variety of species and their population density were a joy to behold, although I took nothing of particular note. But the pond was rich in all kinds of life, including

molluscs, among which I was pleased to find *Planorbis corneus* Linn.

Having fished this pond thoroughly I was feeling pretty tired; and anyhow, it was time to pack up and start for home, so I decided not to bother with the other one. I knew its type of old, and was in no mood for heavy netfuls of black mud, rotting leaves, and crawling masses of specimens of *Asellus* sp(p). (Fresh-water Louse). But no! On second thoughts I would just have one dip, just to prove how useless it was. So, not even troubling to leave the verge of the road, I dipped my net near the bank, drew it through the water for no more than a foot or so, and gazed gloomily at its contents. Crawling up the side was the largest nymph I have ever seen, of our largest dragonfly! It was obviously near transformation, so I took it home, and two days later it climbed its stick and emerged — a magnificent specimen of *Anax imperator* Leach!

Now for another bit of luck resulting from a mere afterthought. Staying at Crewe for a few days on business, I took the opportunity of driving about the district looking for fishable ponds. My one inch to the mile maps mark sizeable waters, but not those insignificant little ponds and ditches which sometimes prove so rich in bugs. In unfamiliar country one finds these, broadly speaking, by just roaming about and trusting to luck.

For my purposes, the area round Crewe seemed poor. Still, I *did* find several ponds of a sort, and dutifully fished the lot. None produced anything but the commonest of the common, and eventually, far from cheerful, I began trying to find my way back to the hotel. After several miles the road forked, and the map showed that either route would do. For no particular reason I bore right, and had not gone half a mile before

seeing the most promising-looking pond of the day! Should I leave it? After all, it had been a heavy day, with two bananas my only food since breakfast, and there were still another twelve miles to go. Fortunately I acted on the old saying "There's no time like the present"; got permission from the farmer; and set to work while I had the chance.

Some fifty yards of the perimeter were fished, and nothing of interest taken. Then it happened — the catch that made the day. In my net was a specimen of *Ilyocoris cimicoides* Linn! I thought it must be a stray, but in the immediate vicinity I soon caught another five, so there was evidently a nice little colony. This insect is common enough in Kent, where I used to live, and in some ponds there I have taken it by the dozen; but I did not know that it was found so far north. On returning home I consulted Southwood and Leston's '*Land and Water Bugs of the British Isles*', and learnt that although *I. cimicoides* is found in Cheshire, my pond near Nantwich must indeed have been close to the extreme northern limit of the species.

Here, then, we have two chance decisions which made the day. But they were not sheer, unadulterated luck. They might be called 'induced luck', for if you go out one day and fish every pond you see, you at least put yourself in the way of catching anything good that happens to be in one of them! Any bug-hunter, whatever his main interest, could cite scores of similar happy chances from his own experience.

Looking back, however, I can recall two instances of sheer, completely un-induced good luck.

The first occurred when I was living on the outskirts of Bedford, and concerns a moth. Our dog used to sleep in an old stable some fifteen yards from the kitchen door. One mild night in early November I took

it across to this stable as usual, and on the ground in the yard saw a particularly dark patch, noticeable even in the general darkness. Not pausing to investigate, I made the dog comfortable for the night and hurried back to the house. As I hung up my hat I began to wonder what that black patch could be, so after finding a torch I went out again to see. No sooner did the beam light up the dark object than I rushed back to the house, siezed the first thing handy — a pudding-basin — dashed out again, and covered the object with the basin. Then, armed with my butterfly-net so as to reduce risks to a minimum, I prepared to deal with it. The dark patch in the yard was a specimen of *Acherontia atropos* Linn. (Death's Head Hawkmoth)!

In the event, however, there had been no need for precautions, for the moth could hardly move. I left it in the kitchen overnight, hoping that the warmth would cheer it up; but on coming down next morning I found it was dead. Examination showed it to be a magnificent specimen, definitely on the large side, and so fresh that I could only suppose that it had emerged close by, taken wing, and almost immediately crash-landed in the yard. I had been astonishingly lucky in that both myself and the dog, which had run and bounced about all round me on our way to the stable, had avoided treading on the moth, for it had lain only a foot or so to the left of our direct path.

I sent it to Messrs Watkins and Doncaster for setting, not having a large enough board myself, and they wrote later to say that of the fifty or so Death's Head Hawkmoths on their boards, mine was one of the best; so it can be accepted that I have not exaggerated the excellence of its condition. In due course the moth was returned to me beauti-

fully mounted in a glass-topped box, and I gave it to the museum of the Manchester High School for Girls. Why on earth . . . ? Merely because my sister-in-law was headmistress of the biology department. How dull the truth can be!

Alas, my beautiful moth is no more. It was destroyed in an air-raid on Manchester during the last war.

My second instance of sheer good luck happened when I was living near Orpington, Kent, and concerns a dragonfly.

During a bout of influenza I was told, one day, that there was a big dragonfly on the bedroom wall. Next day it was still in the same position, and was found to be dead. As soon as possible I examined it, and it appeared to be a specimen of *Cordulia aenea* Linn. but as that species was not recorded for Kent, I assumed that I was mistaken.

Some weeks later I took it to the British Museum (Natural History) to be properly identified. At the office I was handed over to an attendant, who conducted me along what seemed miles of dimly-lit corridors, my spirits sinking a little more with every step. What an ass I should feel when at last I was presented to the Chief Dragonfly-identifier! I should be told, of course, that my dragonfly was as common as mud, and had first been recorded for Kent by William the Conqueror!

Suddenly my guide flung open a door, ushered me into a large, well-lit room, and left me to it. At a table near a window stood a lady, pasting papers into a book. Glancing in my direction she said, "Just wait a minute till I've finished this", and the informality and kindly tone at once set me at ease. A few moments later she examined my specimen, and the nymphal skin of the specimen of *Anax imperator* Leach mentioned above, which I had also brought. Then followed an unforget-

table twenty minutes or so of talk about dragonflies. What a privilege this was, for the un-terrifying authority on dragonflies was Miss Cynthia Longfield, authoress of '*Dragonflies of the British Isles*'.

Miss Longfield was delighted with my nymphal skin of *A. imperator*, for it was certainly very large even for that species; and she determined my dragonfly as being a specimen of *Cordulia aenea* Linn., so that was all right; but it was not new to Kent. It had first been recorded there some two or three seasons previously. Printing was so slow, I was told, that by the time records were published they were already out-of-date. That was soon after the last war, however; perhaps things are better now.

28.12.63.

H. Caiger (2908).

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COLLECTING ON THE CONTINENT OF EUROPE

The steady decrease in the areas suitable for collecting and study of wild life in our Islands, and the diminution in the numbers of individuals and species of our native flora and fauna due to the inroads of civilisation, 'sprays', the Forestry Commission, the War Office, etc., have made many naturalists look to the Continent for some relief. Our execrable summers in past years have made the planning of ventures to the less well-known parts of our Islands a very doubtful undertaking, and a fortnight spent in Scotland, Ireland or the West Country has often contained only one or two days of collecting weather in the fortnight. While bird-watchers, botanists and the like are not com-

pletely immobilised by bad weather, the entomologists, particularly those who seek insects that love the sun, must have good weather if the success of their hard-earned holidays is not to be jeopardised. This makes collecting in central and southern Europe a very attractive proposition. Modern transport, and the camping and hotel facilities which are so readily available over the greater part of the Continent, make the naturalist's task easier there than in this country and the cost is the only factor which would make one hesitate. This cost need not be too heavy if one is prepared to camp out and has a car with suitable accommodation for collecting and camping gear. Even 'Youth Hostelling' with a bicycle gives quite a scope and my son, Philip, was able to cover some 1,000 miles across France and into Germany by this means during the last summer.

The wealth of insect and plant life to be found on the continent is sufficient enticement and reward for any effort which is involved in collecting there. Instead of those four Cabbage White Butterflies (*Pieris brassicae* Linn.) and the rubbed Large Heath Butterfly (*Coenonympha tullia* Muell.) which you got on the fortnight's trip to Scotland last year, you will have enough material to set and name to keep you busy into the winter months, plus an exciting holiday and a wider picture of where our own meagre insect community finds its place amongst the insects of the European Continent. What has been in the past a luxury for the few who could afford it, has now become a possibility for many. The French and Italian Alps, Switzerland, the German Black Forest and the Pyrenees are now only a few hours away, and if you travel by air such places as Spain, Yugoslavia and the Balearic Isles seem almost on your doorstep. Education has given the opportunity

to many of us to have a working knowledge of some of the European languages, and a further barrier is thus surmounted.

In his book '*The Naturalist's Riviera*', Mr A. N. Brangham points out that much of the spade-work in the study of the natural history of southern France was carried out by visitors or exiles from this country, and there is no reason why this tradition should not be continued. In a recent *Bulletin* (*Bull. amat. Ent. Soc.*, **22**: 60-3), Mr Brangham invited Members to take an interest in the National Park of the Cévennes. I hope that some of our Members will respond to this invitation. I am not advocating the abandonment of the cause of preserving the relicts of our own fauna and flora, for there is very much research and study still to be done in this country. The amount of work to be done with regard to the insects of Europe, however, is Gargantuan.

Having made these comments, I now make the request that Members who have some experience of collecting on the Continent should write to me in order that I may begin the collation of information for the use of other Members who may be contemplating a trip abroad. I envisage the preparation of a possible publication which would deal with European Rhopalocera, giving information about areas in which various species may be expected to be found, the season that these species are on the wing and (I hope) pictures and descriptions of the species. The text-books which are at present available in English are over half a century old and require correction in nomenclature, and improvement in description and information on habitat. The books by Kane (1885), Kirby (1882), Lang (1881) and Wheeler (1903) have information which needs synthesising, while more

recent text-books in German and French, which require a fair knowledge of the language, I still find to be sketchy in information and hazy as to nomenclature. The monographs which are available on certain groups can be used if one visits the British Museum (Natural History) but what is really required is a handy book which can accompany one on any trip abroad. In producing such a book I should welcome information under the following counts:

1. Areas visited. (This need not mean the exact locality.)
2. Time of year. (Day and month if possible or an indication of time of month).
3. Species of butterfly observed or taken (but only if identity is certain).
4. Occurrence. (Rare, locally common, etc.)
5. Altitude if known—this applies particularly to mountain species.

I am trying to build up a representative collection of European butterflies in order that I may photograph them, and any help in this field would be greatly appreciated. If any Member has surplus specimens of European species I should be pleased to exchange for other insects any which I require. I am also willing to name any doubtful species, either by myself or with the assistance of the representative collections at the British Museum (Natural History).

In the pursuit of Continental species, it is often desirable that two or more collectors should join forces. Not only does such a liaison help to reduce the overall costs in many cases but it provides company and is a safeguard against illness and accident. It is dangerous and foolhardy to attempt to collect by oneself in some areas (even in this country) if these are remote from human habitation and subject to

mist, rock-falls, etc. Outings to such places should be made by a minimum number of two people. It is sometimes difficult for Members to contact other Members who would be willing and able to share in a collecting trip abroad. In view of this it has been suggested to me that I should act in bringing such Members together. This could be done if those wishing to travel in search of Continental species of insect (of all Orders) would write to me indicating their wishes, and I could then bring two parties into contact with each other so that arrangements mutually agreeable to both could be made. My gain in the transaction would be a comprehensive report on the results of the outing from those Members concerned, and I hope that the Editor would gain a very interesting article for the *Bulletin*.
23.10.63. P. W. Cribb (2270).

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A COLEOPTERIST IN SOUTHERN FRANCE, JULY 1963

Our fourth expedition to the south of France produced a number of species not taken on our previous expeditions. At Digne, Basses Alpes, which was our first stop, the chafers *Amphimallus solstitialis* Linn. var. *pineticola* Graells, *A. assimilis* Herbst and *Anisoplia villosa* Goeze were scarce owing to the lateness of the season. *Potosia morio* Fab. was still common on the flower-heads of

thistle and of knapweed (*Centaurea* sp(p).), and *Cetonia aurata* Linn. was found commonly on the massed flower-heads which were growing in the alpine meadows. Here there were also many *Leptura* spp. The phytophagous beetles were scarce and sweeping with a net produced very little. On our first visit to Digne in 1959 these beetles were very common, especially the many species of *Cryptocephalus*. That visit was in late June when the flower-covered fields and grassy valleys teem with life. By July things are beginning to parch a little. Running on the mud and silt patches of the river bed above the Thermal were many specimens of *Cicindela hybrida* Gebler. One female specimen of *Lucanus cervus* Linn. was found on the trunk of a poplar tree (*Populus* sp.) near the stream, and in the potato (*Solanum tuberosum* Linn.) fields nearby, the Colorado Beetle (*Leptinotarsa 10-lineata* Say) was swarming in all its stages. Three species of *Anthaxia* were taken off flower-heads, including *A. nitidula* Linn.

Our next hunting ground was the area around Fayence, Department Var. The beautiful beetles *Trichodes apiarius* Linn. and *T. alvearius* Fab. were here on the heads of the umbelliferous flowers. A few specimens of *Cetonia aurata* were seen on thistle heads, together with specimens of *Zonabris polymorpha* Pall. and *Z. 12-punctata* Olivier. Two large fig trees (*Ficus carica* Linn.) by the roadside, heavy with ripe and over-ripe fruit, produced a great number of individuals of *Cetonia aurata* and *Potosia cuprea* Fab.

Gyrinus natator Linn. was swimming on the surface of the small stream flowing through the valley, and here I also took a species of *Agabus* (still un-named) and one specimen of *Chlaenius spoliatus* Rossi. This last-named is a handsome beetle very

like our *C. vestitus* Payk. but much larger.

In the square at Fayence near our hotel, I picked up a dead specimen of the giant beetle *Oryctes nasicornis* Linn. — it was a male and had probably been on the wing in the late evening and been knocked down and killed.

The fields of Lavender (*Lavandula spica* Linn.) in this area which have been described by Mr P. W. Cribb in a previous article (*Bull. amat. Ent. Soc.*, 22: 128 - 33) were swarming with butterflies but produced few Coleoptera. The flower-heads of the yellow knapweed growing along the edges of the fields were covered by specimens of *Potosia cuprea*, *Cetonia aurata* and many *Longicornia* spp. One specimen of *Potosia affinis* Andersch in Hoppe was taken here. It is a very beautiful beetle of a brilliant green colour. The woodland rides above the Lavender, rich in butterflies and redolent with the scent of the Spanish Broom (*Spartium junceum* Linn.) were very disappointing in beetles, due almost certainly to the time of the year. Sweeping the Spanish Broom produced stick insects and mantids, while searching under stones only revealed numbers of scorpions.

We left the lowlands, and our next place of call was Barcelonnette. On the slopes of the Col de Larche I found the large weevil *Larinus jaceae* Fab., together with the omnipresent *C. aurata*. Sweeping the fields of Sainfoin (*Onobrychis viciifolia* Scop.) at the top of the Col just over the Italian border produced only specimens of the beetle *Dascillus cervinus* Linn., a very common beetle on our own South Downs.

In the valley on the flats beside the River Urbaye we again found *Cicindela hybrida*, and the chafer *Anomala aenea* Deg., which was fairly common on the dwarf willow (*Salix* sp.). The chafers varied much

in colour from the normal greenish-brown to black. The very fine long-horn *Purpuricenus budensis* Goeze was taken on the wing and also by sweeping — this beetle was just emerging. One specimen of *Spondylis buprestoides* Linn. was taken and *Cerambyx scopoli* Fuessl. also appeared. On the Spanish Broom I took two fine specimens of *Molorchus major* Linn. This is a fine insect like a giant specimen of our *M. umbellatarum* Schreb. and can easily be mistaken for a large hunting-wasp at first sight. A few of the *Cryptocephalus* spp. were swept off flowers, including *C. bipustulatus* Fab. (= *biguttatus* Herbst). A specimen of *Pterostichus bicolor* Arago was found under a stone.

At La Grave, Hautes Alpes, where we ended our trip, I found most of the species taken in 1959, with the exception of *Emus hirtus* Linn., which was apparently 'over'. The very beautiful *Chrysochloa gloriosa* Fab. was quite common and I found *Cetonia aurata* and *Potosia cuprea*, mostly on the tall yellow Gentian (*Gentiana lutea* Linn.). On our previous visit here I took a single specimen of the Spanish Fly (*Lytta vesicatoria* Linn.), which settled on the top of the car parked outside the hotel beneath Ash trees (*Fraxinus excelsior* Linn.). I hoped to find it again but it was not until our last day of collecting that my son, Peter, found it flying round the tops of the small Ash trees in some numbers, on the mountain slopes above the river. With the aid of a long Ash plant to which we secured the butterfly-net, we were able to net a dozen specimens of this handsome beetle.

A very enjoyable fortnight came to an end all too soon and we arrived home with a lot of setting to be done, a considerable sun-tan and a little more knowledge of the entomological fauna of southern France. 1.10.63. H. J. Cribb (2044).

A MONTH'S JOURNEY BY BICYCLE ACROSS NORTH FRANCE

I crossed from Folkestone to Calais after the long ride from London to the Coast, and in intermittent rain made my way from one Youth Hostel to the next as quickly as possible between the downpours. I landed at Calais on 17th August, and after riding through Arras and St Quentin I came to Laon, where a break in the weather permitted some collecting. Laon lies to the south of Arras and to the north of Rheims and is a most picturesque town. The area to the north consists of wooded hills. I only stayed here for a short while and cannot comment on the area as a whole, but my brief glimpse of the roadside areas revealed meadows with a luxuriant growth of flowers, mainly Lucerne (*Medicago sativa* Linn.) and Red Clover (*Trifolium pratense* Linn.). It was here that I saw the first butterflies of my journey. Large and Small Whites (*Pieris brassicae* Linn. and *P. rapae* Linn.) were abundant, and I also saw the Peacock (*Nymphalis io* Linn.) and the Small Tortoiseshell (*Aglais urticae* Linn.). The Wall (*Pararge* (= *Dira*) *megera* Linn.) and the Common Blue (*Polyommatus icarus* Rott.) were also fairly common and so were males and females of the Clouded Yellow (*Colias croceus* Fourcr.). I captured a battered specimen of the Swallowtail (*Papilio machaon* Linn. ssp. *gorganus* Fruhst.). The whole of this area and the region south of it to St Dizier is gently undulating country with abundant clovers (*Trifolium* spp.) and Lucerne. It is an area which would bear closer investigation by someone with better weather and more time than I had. I took a Queen of Spain Fritillary (*Argynnis lathonia* Linn.) near Chalons. I entered the Ardennes near Ligny

en Barrois on the River Meuse. This town lies in a hollow between high forested hills. It rained almost continuously as I rode, and it was not possible to do any collecting, although much of the countryside looked promising. The countryside is fairly well cultivated, with fruit trees and vines. I crossed into the Saar (Germany) at a spot east of Nancy and stopped at St Ingbert, where I found good weather at last. It was sunny for three days, and I went collecting in the valleys near the Mannheim Autobahn. In addition to the species already mentioned, I took the Pale Clouded Yellow (*Colias hyale* Linn.), the 'copper' *Chrysophanus dorilis* Hufn. and the Large Wall (*Pararge* (= *Dira*) *maera* Linn.). I also took some very large specimens of the Common Blue. On some poplars (*Populus* sp.) I found Coleoptera of the family Chrysomelidae, and nearby some beetles of a species of *Cicindela*, which turned out to be *Cicindela maritima* Latr. et Dej., were running on the sandy footpaths and not near any water. In the forest I saw specimens of the High Brown Fritillary (*Argynnis cydippe* Linn. (= *adippe* Rott.) and some deer. The meadow Saffron (*Colchicum autumnale* Linn.) was also in flower in this area.

After my stay in the Saar, I rode on towards Luxembourg. The countryside is wonderful but very hilly, gradients of 13% [about 1 in 8] for up to three kilometres being quite common. The views of the Moselle valley are wonderful, and the hills on the German side are very wild with no roads. This is another area which would be worth exploring. The River Moselle is as wide here as the River Thames at London and full of fish. South of Champlon I saw the most beautiful country of my trip: valleys with small streams, meadows of Lucerne and Meadow Saffron, butterflies all along the roadside and trout (*Salmo* sp(p.) in

the streams; in short, something everywhere of interest to the naturalist. I took specimens of the Silver-spotted Skipper (*Hesperia comma* Linn.) and a small dark form of the Small Heath (*Coenonympha pamphilus* Linn.).

After the beauty of Luxembourg and the Ardennes, the road into Brussels and on to Gent and Dunquerque seemed to have little of interest. The country is flat and cultivated, offering none of the scope for the entomologist that can be found in eastern France, in the Saar and in Luxembourg. The only hindrance to a fine collecting holiday was the continuing unreliability of the weather.

1.11.63.

Philip J. Cribb.

A VISIT TO SPAIN, 1963

On 4th April last year I and a party of pupils from my school left for the Costa Brava, Spain.

We reached our destination on 6th April, and found that our hotel was only about two hundred yards from the beach.

Soon after lunch on the first day I and a friend of mine who was also interested in Lepidoptera went for a short walk behind the hotel. We did not expect to see anything much except perhaps an occasional Large White Butterfly (*Pieris brassicae* Linn.). We returned to the hotel empty-handed but for a few examples of Spanish Coleoptera, a group which I had only just started to collect. Unfortunately beetle-hunting was not pursued vigorously because I soon forgot about it after seeing the large number of Lepidoptera in the area.

The next morning the two of us

went out in a different direction to that of the day before. About two hundred yards up the road we found a field which was inhabited by many butterflies. We had not expected to find such a profusion of butterflies at this time of year. In the first few minutes I had caught many butterflies such as Clouded Yellows (*Colias croceus* Fourcr.) and Bath Whites (*Pontia daplidice* Linn.). In this same field we found some larvae of the Marsh Fritillary (*Euphydryas aurinia* Rott.) which later died on the return trip to England. Unfortunately we were later sent off this field by the owner, although, because there were no fences, we had had no idea that it was private land. We continued to walk up the road until we came to a lane which led up to a small hill. This is where I saw the first Camberwell Beauty (*Nymphalis antiopa* Linn.), a magnificent flyer, flying at about thirty feet. Hoping it would come lower, I chased it, but I had to give up because it flew off over the tops of some trees. After a few minutes we continued up the lane where we caught some Green Underwing Coppers (*Thestor ballus* Fab.), which are rather like Green Hairstreaks (*Callophrys rubi* Linn.) but the uppersides are orange with brown borders.

Further up the lane we came to a small wood where I caught more Clouded Yellows and one more Bath White. We also saw many Humming-bird Hawkmoths (*Macroglossum stellatarum* Linn.). In the afternoon we returned to the wood, where there were more Clouded Yellows and Green Underwing Coppers.

The next day we returned to the wood again and upon entering it saw a Humming-bird Hawkmoth hovering above a flower. Later in the day I caught some Common Blues (*Polyommatus icarus* Rott.), Green Hairstreaks, Green Underwing

Coppers, Bath Whites and Clouded Yellows. On the way back to our hotel I caught a moth rather like a Four-spotted (*Acontia luctuosa* Schiff.).

On the following day I returned by myself to the same wood yet again. The same species as the day before were in evidence together with a few different species such as a Grizzled Skipper (*Pyrgus malvae* Linn.), Painted Ladies (*Vanessa cardui* Linn.) a male Orange Tip (*Anthocaris cardamines* Linn.), a V-moth (*Itame wauaria* Linn.) and a Continental Brimstone (*Gonepteryx cleopatra* Linn.).

11th April was to be my best day, however, for in the wood I caught the usual species and a few others such as a Mazarine Blue (*Cyaniris semiargus* Rott.), many Humming-bird Hawkmoths and a Swallowtail Butterfly (*Papilio machaon* Linn. ssp. *gorganus* Fruhst.). We found the Humming-bird Hawkmoths hovering above a bank on the side of a lane in the sun. The only way I could catch specimens was to place the net under each one and then make a quick stroke upwards, twisting the net to trap the moth.

After I caught the Swallowtail I saw several more species including the Scarce Swallowtail (*Papilio podalirius* Linn.), but I was unable to catch any specimens of *P. podalirius* because of their rapid flight. I also saw several Camberwell Beauties but these too were rapid fliers.

On my seventh and final day in Spain, I again failed to catch a Camberwell Beauty, but did take a butterfly rather like a Dingy Skipper (*Erynnis tages* Linn.), a Small Copper (*Lycaena phlaeas* Linn.), a Wall (*Pararge* (= *Dira*) *megea* Linn.) and a Small Heath (*Coenonympha pamphilus* Linn.).

I returned to England with far more species than I had expected

to get, and I am hoping to return to Spain in the future. Perhaps then I can catch that Camberwell Beauty!
21.1.64. J. S. Noyes (3523J).

JUNIOR NEWS SECTION

I suppose now is the time to breathe a sigh of relief after a back-to-normal English winter, and a time to prepare for the coming summer. You should by now have sewn up the 'moth' holes in your nets, re-charged your killing-bottles, scrubbed out your pooters and de-rusted all your other equipment. Talking of equipment, I would like to add that if you have any bright ideas on this please let us know. It is surprising how few of the clever pieces of equipment you think of ever come into general use, because you think they are too simple. It is often the obvious things which are overlooked. Most other people also have limited pocket-money, you know, and cannot afford to buy expensive equipment. St Ivo Entomology and Natural History Society are still seeking suitable portable cages for carrying live grasshoppers and other insects; ways to carry spirit for pickling insects; strong and light dual-purpose nets; and pooters which are cheaply made but which do not break in the hand or need a wheelbarrow to carry them. All our expeditions are made by using rucksacs, Youth Hostels and public transport. I should imagine that very few of you are in the 'Land Rover' class of hunters, so that you must also have the problem of finding gear which is easy to carry. By the way, we use Youth Hostels because of the wonderful fellowship to be found in them, because of their cheapness and because we have found that we have been unable to do camping and natural history together successfully.

How to persuade parents to stop persecuting the young entomologist

Most people do not like being blinded by science. They are not filled with joy by being told that the creature they have given you is a specimen of *Dorcus parallelipipedus* Linn. 'Lesser Stag Beetle' is really much more suitable. Dad feels much happier bringing you a Black Snail Eater than a specimen of *Phosphuga atrata* Linn. Do not be afraid to make up a suitable English name for an insect for the benefit of non-entomologists if you only know a scientific name. Such an 'English' name gives your parents something to tell their friends and also makes them feel it would be possible to understand your hobby if they wanted to (which I am afraid is doubtful). Another thing which annoys parents is to be told, by their bug-hunter son or daughter, that whatever specimen they have caught is the *common* something-or-other. They confuse 'common' meaning found everywhere with 'common' meaning to have little worth: so never use common or, for that matter, ordinary, in any name you say to a non-entomologist adult. Substitute House or Field or British for Common. I know of one boy who always gave English names for all his insects and never called anything common — and he was allowed to keep larvae of the Dor Beetle (*Geotrupes* sp.) in his mother's fruit bowl. He also never refused a specimen. I know many of you find it hard to give things away, and you will also find it hard to accept things. Try to do both graciously.

If you really wish to show how clever you are, try these questions (answers in next issue):

- (1) How many wings has a damsel fly?
- (2) Give three insects which belong to the Order Orthoptera.

- (3) Name the three segments of an insect's thorax.
- (4) What is the main difference between the Coleoptera and other Orders?
- (5) How does the scorpion fly get its name?
- (6) Name the world's largest moth, and largest beetle.
- (7) Isoptera are sometimes called 'white ants'. What are they really?
- (8) What are British social wasps' nests made of?
- (9) What is the scientific name of the Honey Bee?
- (10) What is the function of an insect's Malpighian tubules?
- (11) Why have motor cars made the House Fly (*Musca domestica* Linn.) a rare animal?
- (12) How many species of British bumble bees are there?
- (13) What are the tiny yellow cocoons often found on the body of a dead caterpillar of the Cabbage White Butterfly (*Pieris brassicae* Linn.)?
- (14) Why is the robber fly so called?
- (15) What is the function of an insect's tracheae?
- (16) Where are the ears of a shorthorn grasshopper situated?
- (17) What do most ladybird beetles feed on?
- (18) The stick insect *Carausius* (= *Dixippus*) *morosus* Br. reproduces by a process called parthenogenesis. What does this mean?
- (19) What do we mean by 'social' insects?
- (20) In which form do House Flies spend the winter?

Please send in records of your first sightings for this year of butterflies and moths. Records of the first bumble bee queens seen (description, please) and tiny grasshopper nymphs seen (specimens, please), would also

help to add a little to our knowledge of insects.

Do remember that conservation of nature is very important, so that if you do find a colony of rare butterflies in the middle of Manchester do keep it to yourself and only take one specimen.

I wish you good hunting.

H. J. Berman (294 1A)

REVIEWS

The Journal of Research on the Lepidoptera, edited by William Hovanitz, published at 1140 W. Orange Grove Avenue, Arcadia, California, U.S.A. Price 8.00 dollars (57/6).

The first volume of this journal is now to hand and its inception is to be welcomed for it helps to satisfy the long-felt need for an outlet, in one source, for the increasing number of illustrated papers on the Lepidoptera.

The first number was issued late in 1962 and it is expected that the first two volumes will be completed by the end of 1963. Thereafter it is expected that there will be one volume, issued in quarterly parts, per year.

Among the contents of this first volume there are a number of papers on the genus *Pieris* which could be read with great profit on this side of the Atlantic. *Pieris rapae* Linn. (Small White Butterfly), for instance, is shown to thrive best on kale (certain of the cultivated varieties of *Brassica oleracea* Linn.). Is this true for British representatives of *P. rapae*? Why do larvae prefer the type of foodplant their mother fed on? These are questions that could well be answered by Members of our Society.

While the majority of the papers

deal with American butterflies, the fact that biology is stressed and taxonomy kept to a minimum makes these papers interesting reading, and the principles and methods used can well be applied to other species.

It is certainly not the intention of this new journal to confine itself to the American scene, and papers on Lepidoptera from anywhere in the world will doubtless appear in later issues as the journal becomes known to lepidopterists.

A subscription price of nearly £3 is not unreasonable for a volume of 300 pages which is not only well-printed on paper of excellent quality, but is also profusely illustrated with line diagrams, half-tones and eight coloured plates.

B.O.C.G.

British Butterflies, illustrated and described by Richard Ward. Brooke Bond Tea Ltd, London. Price 6d.

The cigarette card, treasure of my youth, died with the last war but has been resurrected in another form by the introduction of the tea-packet card. Brooke Bond Tea Ltd have over the last few years produced several series of such cards on natural history which compare very favourably with pre-war cigarette cards, and have taken the interest of collectors of these cards a stage further by supplying excellent little booklets designed to receive the cards as they are collected. The latest issue deals with the British butterflies. At a cost of sixpence it is real value for money and the tea consumption in my own household has risen phenomenally in order to secure the cards to fill the booklet.

I find it hard to fault the colour reproduction and the drawings are of a high standard. Fifty species are depicted on the cards, each with a description (the descriptions are repeated in the booklet, below the

spaces for the cards), and notes on the other species and migrant or extinct species are included in the text of the booklet. Several pages are devoted to drawings of varieties, larvae and ova and there are notes on collecting and on the structure of insects.

I would disagree with some of the text where some comments are very misleading and there are several minor inaccuracies. There is the statement that "varieties or aberrations usually occur owing to some great temperature difference during the pupa stage of the insect, though with certain butterflies there is the possibility that aberrations occur due to hereditary reasons". I would consider that the reverse of this statement is nearer the truth. There is another note which states that "with two exceptions, butterfly wings meet vertically over the back when at rest, but moths usually are folded nearly flat". This discounts the fact that a large number of butterflies at rest in sunlight drop their wings flat, and ignores that large mass of moths that rest with their wings closed vertically. There are, copied from standard text books, one or two minor errors about particular foodplants. In view of the great interest of the relationship of the Large Blue (*Maculinea arion* Linn.) with the ants it is a pity that it is not mentioned. The description of some caterpillars is also misleading, e.g., "the caterpillars are blue green marked with thin white stripes and flat in shape" is hardly a correct description of the larvae of the Purple Emperor (*Apatura iris* Linn.).

However, the excellence of the whole offsets the minor aberrations, and Mr Ward and Brooke Bond Tea Ltd are to be congratulated on producing a booklet well worth filling and keeping. Let us hope for cards from the same sources on further entomological subjects.

P. W. C.

LOUGHBOROUGH NATURALISTS' CLUB

Hon. Secretary: Mrs P. A. Candlish, B.A., 'Rockside', The Dawe, Woodhouse Eaves, Nr Loughborough, Leicestershire.

The Annual Report of the Loughborough Naturalists' Club (which is affiliated to the AES) has just been published (Feb. 1st 1964). The most impressive aspect of this report is the number of activities undertaken by the Club. During 1963 there were five Committee meetings, one A.G.M., five ordinary meetings, five special meetings and six outings or field trips. As well as this, the Club started or continued eleven surveys. All except two of these have shown very satisfactory progress. The key to the Club's success is undoubtedly the keen support of its members, for 88 per cent of them participated in or attended the above-mentioned activities.

Support for the many branches of natural history studied by the Club has remained as strong as in previous years. The predominant interest appears to be the study of bird life, but plenty of stimulus was provided for those with other interests.

This Club must be among the most successful in the Country and is an excellent example to those who may be interested in forming a local or county organisation. I am sure that all AES Members wish the Club every success for 1964.

G.D.T.

NOTES AND OBSERVATIONS

THE PINE HAWKMOTH IN NORTH KENT

On the night of July 8th 1963 a male specimen of *Hyloicus pinastri* Linn. (Pine Hawkmoth) was taken at

our moth-trap in Orpington. The moth appeared in the trap quite early, at about 11 p.m.

We do not know of any recent records from Kent of this insect. However, with the recent extension of its range across Surrey and with the post-war conifer plantations nearby, it is quite possible that it is now breeding in this area.

8.2.64. { D. W. Webb (3000).
P. E. Webb (3526J).

THE WICKEN SEDGE FEN

Readers might be interested in some facts (if they do not know them already) which I unearthed from a gardener when I visited the Fen in August 1963.

The Large Copper Butterfly (*Lycaena dispar* Haw.), which was reasonably common before 1940, was exterminated by the cutting down and claiming from the wild of the majority of the acreage of the Fen. Thus it was not able to maintain itself (against excessive collecting) in the small acreage it had been left.

Today one must sign the visitor's book to look round the Fen, but to take any specimens of the Swallowtail Butterfly (*Papilio machaon* Linn.) one must obtain a special permit from the National Trust. The Swallowtail Butterfly also occurs at the Hickling Broads. As well as feeding on Milk Parsley (*Peucedanum palustre* (Linn.) Moench) and Carrot tops (*Daucus carota* Linn.), the larva will also eat Angelica (*Angelica sylvestris* Linn.).

When feeding on Milk Parsley, the Swallowtail larva strips off only one side of the leaf, in its own particular manner, thus giving its position away. From what I had read before I had gained the impression that *Papilio machaon* was rare, but now I know that it is 'hanging on' in a very very precarious position.

7.1.64. John S. E. Feltwell (3618J).

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VOL. 23

No. 264

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AUGUST, 1964



**THE BULLETIN
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SILVER JUBILEE NUMBER

1935-1960

Published August 1960

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AES BULLETIN



A E S

BULLETIN

No. 264

AUGUST, 1964

EDITORIAL

I am glad to say that the amount of copy which has been forthcoming during winter and spring has been quite satisfactory, so that I will keep this Editorial short in order to make room for as many articles from Members as possible.

It might just be added that I shall be abroad for a fair period this summer, and perhaps Members would bear with me if replies to correspondence seem unduly slow. Please do send in your material, however, as copy is generally most scarce in the summer, yet edited copy for the November issue must be sent to the printer before the end of August.

H. V. Danks (2907).

•

SECRETARY'S NOTES

I have just received my copy of the May *Bulletin*, and it is very pleasing and encouraging indeed to see some fresh names among the contributors. I hope it has made interesting reading to you all, and that in consequence you will make your own contribution to the contents of the *Bulletin*. Do not despair if any material that you submit does not appear in the first *Bulletin* afterwards, for the Editor will fit it in as soon as he can.

Another point that was pleasing to see was the number of Members making use of the facilities of the *Wants and Exchanges List*. Somewhere

there is a fellow Member who would be pleased to take your surplus stock, whether it be livestock, set specimens, books or equipment, either by exchange or purchase, so please send all details to Mr R. W. J. Uffen, 4 Vaughan Avenue, Stamford Brook, London, W.6.

The article by M. E. Castle (*Bull. amat. Ent. Soc.*, 23: 57-8), is an excellent example of how to get the best out of the Society and how you can help someone else get something out of the Society by putting a little back in yourself.

Leaflets

I would be interested to hear from any Member who has an idea for a new leaflet or pamphlet. A sub-committee of the Council is at present undertaking the task of going through the existing range of leaflets and pamphlets, revising them as necessary and writing up one or two new ones, and any new ideas for this purpose would be welcomed.

Annual Exhibition

The Annual Exhibition will again be held in October (the date has not yet been finally fixed [but see the following item]) and now is the time to start thinking about your exhibit. A very good exhibition was held last year, but let us make this year's one the best ever. This is the big opportunity for Members to meet other Members, and many a good friendship has started here. A notice giving the details will be sent to you in due course.

I still have the following books by J. Henri Fabre available:—

The Life of the Caterpillar

The Life of the Grasshopper

The Glow-worm and Other Beetles

The Life of the Weevil

No charge other than postage is being made for these books, and anyone interested should contact me.

I send best wishes to all Members.

Douglas E. Dodwell (3482),
Hon. General Secretary.

•

THE ANNUAL EXHIBITION 1964

The Annual Exhibition for 1964 will, subject to confirmation, be held on Saturday 24th October at the Hugh Myddleton Secondary School, Corporation Row, London, E.C.1, beginning at 2 p.m.

When the date has been finalised, notice of it will be sent to Members. However, now is the time to prepare your exhibits, and it is hoped that a really extensive display of equipment, specimens and livestock will be produced. I would emphasise that *good labelling* of exhibits is most important, and perhaps we could make a special effort over this for the 1964 Exhibition.

The entomological traders will again be present, and the Exhibition provides a unique opportunity for viewing the wares of most of the dealers in this country.

This opportunity, and the chance to meet other Members—and the members of the Advisory Panel, who will be freely available—to pass on your own ideas, and to gain others through the exhibits and demonstrations, is too good to miss. Make sure that you and your friends do not miss it.

B. F. Skinner (2470),
Hon. Meetings Secretary.

•

ANNUAL GENERAL MEETING

The Annual General Meeting was held in the Linnean Society's rooms

at Burlington House, London W.1., on Saturday 21st March 1964.

The meeting was preceded by a conversazione and a very interesting talk on "The Butterflies of Southern France" by the retiring President Mr P. W. Cribb. The talk was illustrated by colour slides, and Mr Cribb brought along several exhibits.

Following the meeting, a Special Meeting was held to amend Rule No. 5 of the Society's Constitution and Rules. The amendment was carried unanimously.

The AES Council for 1964 is now constituted as follows:—

Hon. President
D. Ollevant
Hon. General Secretary
D. E. Dodwell
Hon. Treasurer
G. D. Trebilcock
Hon. Assistant Treasurer
B. R. Stallwood
Hon. Bulletin Editor
H. V. Danks
Hon. General Editor
R. W. J. Uffen
Hon. Advertising Secretary
R. D. Hilliard
Hon. Youth Secretary
H. J. Berman
Hon. Meetings Secretary
B. F. Skinner
Councillors
B. F. Betts, P. W. Cribb,
A. F. McGeeney,
A. R. Middleton, C. B. Pratt,
V. Shearer, P. Taylor,
L. S. Whicher, N. Wilding

One vacancy remains on the Council, to be filled by the Council. This has occurred owing to a last-minute resignation of Mr T. F. Knight who has had to move away from the London area.

A total of 33 Members and friends signed the Attendance Book.

D. E. Dodwell (3482),
Hon. General Secretary.

THE ANNUAL REPORT OF THE SOCIETY'S REPRESENTATIVE ON THE NATURE CONSERVANCY'S ENTOMOLOGICAL LIAISON COMMITTEE FOR 1963-64

This committee has met twice during the last twelve months and several subjects were discussed which might be mentioned here. An interim report was given on the survey which is being carried out by the Nature Conservancy's investigator into the status of the Large Blue Butterfly (*Maculinea arion* Linn.), and it is obvious from the results obtained so far that 1963 was an exceptionally poor year for the insect and that the fears expressed for the future of this insect are very well founded. In spite of intensive observations and marking experiments made by the investigator, who stayed in the distribution area over the whole of the emergence period, and by a number of experienced helpers, only about 80 specimens were recorded. The investigation is still proceeding and naturally it is hoped that 1964 will be a better year for both weather and butterfly and that a more favourable picture will be apparent after this season. It is pleasing to report that the land-owners concerned are sympathetic and co-operative and it now seems possible that at last something positive will be accomplished.

The matter of collecting in nature reserves was brought up at the last meeting and it was generally agreed that unless entomologists individually, and particularly lepidopterists, were prepared to help the Conservancy by submitting reports on their activities within the reserves some form of limitation might be made, i.e., the future issuing of permits. It must be pointed out that the Conservancy does not wish to hinder scientific investigations by this means but it is only seeking to preserve

the faunae of its reserves, and, the majority of our Members will agree, to maintain these faunae is one of the main reasons for the Conservancy's existence.

The question was raised of the introduction of foreign species and specimens into this country, and of British endemic species into one locality from another. This thoughtless practice has become more frequent recently and if done deliberately is certainly to be deplored scientifically as it makes nonsense of records and genetical studies, etc. If any of our Members are intent on introducing aliens then at least they should have the good sense to report the details in *strictest confidence* to the Royal Entomological Society of London. Our Members are asked to co-operate in this matter and your representative will be very pleased to discuss it in greater detail than is possible here if interested Members will contact him.

21.3.64.

T. G. Howarth (196).



COUNCIL'S REPORT FOR 1963

The number of subscriptions paid for 1963 was 706, and together with those Members joining since 1st September 1963, whose subscriptions cover 1964, the final Membership for the year was 747. This comprised 560 Ordinary and Affiliate, 179 Junior, 2 Life and 6 Honorary Members.

With the new quarterly publication of the *Bulletin*, Members received a full quota of *Bulletins* for 1963, although these came out later than the dates proposed. It is, however, a much brighter picture than in the past, and with this in mind, we can once more look forward to the *Bulletin* being published on time.

The Annual General Meeting was held in the Rooms of the Linnean

Society at Burlington House, London W.1. on Saturday March 30th. A fair attendance was recorded, and the Meeting was preceeded by a conversazione and two films, 'Evolution in Progress' and 'The Melanism Of Northern Lepidoptera'. Both films were by Dr H. B. D. Kettlewell, M.A., F.R.E.S.

A successful Annual Exhibition was held on 5th October 1963 at the Hugh Myddelton Secondary School. A full report appears in the February 1964 issue of the *Bulletin*.

Some changes in the Council took place during 1963. Resignations were received from Mr P. G. Taylor, *Bulletin* Editor, and from Mr M. C. Birch, Youth Secretary. Mr H. V. Danks took over the office of *Bulletin* Editor from Mr Taylor, whom he had been assisting in the past. Mr H. J. Berman of St Ivo School was co-opted as Honorary Youth Secretary. The Council strength was made up by the co-optation of Messrs B. F. Betts, V. Shearer, and P. Taylor.

Once again, the Council wishes to show appreciation of the facilities afforded to Members of the Amateur Entomologists' Society to join other societies on their field meetings. Several field meetings of our own were also arranged.

A revised edition of the Advisory Panel was published in the August edition of the *Bulletin*, and the first Supplement to the 1962 *Membership List and Geographical Key* appeared in the November issue as a 'pull-out'.

Many Members of the Society took an active part in the National Nature Week held in 1963. This included exhibitions, walks, etc.

The Council met six times during the year, for the first quarter under the chairmanship of Mr G. D. Trebilcock, and for the rest of the year under Mr P. W. Cribb.

One of the main obstacles confronting the Society in the past, the

publication of the *Bulletin*, has now been overcome and the Society can look forward to a refreshed life in the future.

Douglas E. Dodwell (3482),
21.3.64. *Hon. General Secretary.*

•

TREASURER'S REPORT FOR 1963

I have to report that the Society sustained a loss of £282.0s. 6d. during the past year. At first sight this appears to be critical. However, I would like to analyse the cause of this deficit.

For some years the Society has been going through a period of extreme difficulties. It is owing to these difficulties that the present deficit has accumulated. During the past three years the Society has employed four different printers, two of which proved to be unsuitable and their prices too high. The continual delay in the *Bulletins* incurred the Society with increased postal charges because of the need for Council members to write personal letters to Members explaining the position and because separate notices of events had to be sent out. In 1963 it was necessary to replenish stocks of Society stationery and to repay Mr Walz of Argentina substantial sums of money that had been credited to him.

The Society has been able in the past to have a credit balance because the delays have made it impossible for commitments undertaken in one year to be paid in the same year. During 1963 the Council has made a great effort to place the Society back on a sound footing and thus the accumulation of outstanding bills has had to be met during 1963. Unfortunately, the past three years have reflected unfavourably upon Membership, and there has been a steady

decline in subscriptions received. In 1961 our subscriptions amounted to £587 whilst this year they amount to £474.

Having outlined the causes of the present deficit I will now proceed to give my estimation of the future. It is probable that the income expected for 1964 will be sufficient to meet the majority of expenses to be incurred. Also, I am confident that the Society will be able to reduce the deficit by at least half. With the *Bulletin* issues now back to normal there will be a decrease in postal charges for two reasons: the postal expenses of various Council members should decrease, and a saving will result from posting *Bulletins* four times a year instead of eleven. This will be the first year that the effect of this will show. The Society has adequate stationery supplies, and demands for funds for this should be small. We can now expect that the Society be once more back on a solid foundation and the number of subscriptions should at least remain stable, and we can hope for an increased Membership. I would also like to point out that although the Society has had increased commitments our reserve at the Halifax Building Society has remained untouched and has in fact increased by £41. 8s. 11d. to bring the reserve to £741. 8s. 11d. I am confident that the present financial position is only a temporary reflection of the past difficulties of the Society, and that within a short period of time I shall be able to report that our deficit has been removed and that the Society is once more in a strong financial position.

G. D. Trebilcock (2976),
Hon. Treasurer.

21.3.64.

TREASURER'S NOTES

The attention of Members is drawn to the following.

(1) Owing to a typing error there is a mistake on the Income and Expenditure Account for 1963 which was sent out to Members with the February *Bulletin*. Annual Exhibition Expenses should read:

£19. 14. 11.

Less Receipts £17. 10. 0.

£2. 4. 11.

(2) The Treasurer would be grateful if those Members who arranged to pay their subscription by banker's order before the increase of the subscription would make arrangements to ensure that the banker's order has been amended to 15/-.

G.D.T.

COLLECTING NOTES — August, 1964

The Smaller Moths

Lithocolletis lautella Zell. Mr Bradford's notes read:—"This moth is drawn from specimens bred from mines in the undersides of the leaves of oak (*Quercus* spp.). The head is black, the thorax a shiny greyish colour.

"The forewings are a rich orangey brown with black edgings to the white areas which are a shining metallic silver. The hindwings and cilia are a greyish brown.

"It is a local insect found throughout Britain and is on the wing in May and in August. I obtained my specimens by enveloping the twigs or leaves in a fine chiffon or a silk stocking."

L. stettinensis von Nicelli. Mr Bradford's notes are:—"The drawing is from specimens bred from the leaves of Alder (*Alnus glutinosa* (Linn.) Gaertn.), the larva feeding in the upper side of the leaf, making a brownish fuciform mine. The whole moth has a greyish brown look about



ESB.

Lithocolletis lautella Zell.

ESB.

Lithocolletis stettinensis von Nicelli

it but like many of the Lithocolletids when seen in sunshine or bright light has a metallic shimmer. The bands and markings on the forewings are dark brownish grey interrupted by silver white bands and wedges. The apex of the wing seems to change in markings as you view it from different angles. They, as well as others of this genus, always remind me of peacock feathers. It is on the wing in May and August."

An easy plant to look out for in the autumn is Yarrow (*Achillea millefolium* Linn.), and quite a number of larvae feed on its leaves, flowers, seeds and roots. I have left the roots—for these can be collected later in the year (or early in the next year)—and will give some idea on what can be found by looking at the plants or gathering the seed-heads. On the flowers and seeds there are:—larvae of *Phalonia dipoltella* Huebn.,

a local moth in the southern and south-eastern counties of England only; *P. smeathmanniana* Fab., another local moth in England; *Euxanthus angustana* Huebn., a common moth; *Eucosma citrana* Huebn., a local moth in England; but probably the commonest and most conspicuous insect will be the case-bearing species *Coleophora argentula* Zell., whose brownish-white case sticks up above the seed-heads; on the leaves there can also be found the case of *C. troglodytella* Dup., although I have found this more commonly on thistle leaves (*Carduus* spp.).

The leaves of Elm (*Ulmus procera* Salis.) may be searched for blotches, and these may be caused by the larva of *Lithocolletis schreberella* Fab. Also when you are gathering your apples look out for the blotches in the leaves caused by the larva of *L. blancardella* Fab.

Probably the commonest larva found on trees in the autumn is that of *Diurnea fagella* Schiff., a rather ugly looking caterpillar with a large head.

As the season progresses collect your seed-heads, nuts and fruits and store them up in the best way for the winter. Any notes, especially on life-histories, would be very much appreciated either by myself or the *Bulletin* Editor. Another point of interest to those whose main hobby is the Macrolepidoptera is that larvae of the Pugs (*Eupithecia* spp.) will also be found on the seed-heads, and this is another group of moths on which plenty of work needs to be done.

D. Ollevant (1514).

The Hymenoptera Aculeata

I must first apologise that the May *Bulletin* did not contain any notes on the Aculeate Hymenoptera: a sudden commitment abroad is my only excuse. However, I hope the natural stimulus of spring was suffi-

cient to encourage collectors, and it is perhaps now, after the surfeit of the spring and early summer forms, that a further stimulus is needed.

The dominant features of the spring Aculeate fauna are the emergence of the hibernating queens of social wasps and bees (*Vespa* spp. and *Bombus* spp.), and the early species of *Halictus*, *Andrena* and *Anthophora*. By July the majority of species are out, and I find a distinct effort is needed to continue with collecting. But there are several late emerging species which are most profitably searched for in August, and I would like to consider two groups here.

Firstly, from among the bees, I will take the genus *Melitta*. Although *M. leporina* Panz. can appear as early as June, the three British species are all on the wing in August. I know of one locality in Kent where all three species occur, though they have never all been taken on the same day. *M. leporina* is the commonest species and is particularly associated with Lucerne or Alfalfa (*Medicago sativa* Linn.). I have also taken it in my garden at Cat-mint (*Nepeta cataria* Linn.). *M. tricolor* Kirby was added to the British list in 1897 by F. W. L. Sladen, from E. Kent. It is readily distinguished from *M. leporina* by the black claw segments of the tarsi. It has proved fairly widespread in Kent. *M. haemorrhoidalis* Fab. is a much larger insect, and is associated with Harebell (*Campanula rotundifolia* Linn.), usually on the chalk downs.

The second autumn group I would like to consider is the sphecids genus *Cerceris*. These bright, beautifully sculptured wasps usually nest in dense colonies, though how much this is due to sub-social behaviour and how much to the limited availability of suitable ground to burrow into is uncertain. Certainly the individual females dig and stock their burrows alone. The six British species can be separated using Saunders' key

(1896) and their habits have been described by Hamm and Richards (1930). Three species are reasonably common in sandy or light gravel areas. *C. rybyensis* Linn. and *C. arenaria* Linn. are the commonest and often occur in the same locality. They differ in the type of prey with which they stock their burrows, and this difference is reflected in their hunting habits. For instance, in Bushy Park, Middlesex, *C. rybyensis* can be seen flying around clumps of thistles and other flowers, searching for bees of the genera *Halictus* and *Andrena*. In the same area *C. arenaria* will be found hunting over the general grassy areas and pouncing on the flowering spikes of grasses in the search for its prey, the weevil *Strophosomus faber* Huebn. An easy way to get a good series of the weevil is to capture the laden females of *C. arenaria* as they return to their burrows in the hard-trodden paths running through the area. *C. cunicularia* Schrank is the other reasonably common species, also preying on weevils. The remaining three species are much less common, not to say rare, and the capture of any would be the highlight in any collector's day. In fact there is only one British record of *C. sabulosa* Panz., so I wish the best of luck to anyone searching for *Cerceris* spp. this August.

J. C. Felton.

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FROM OUR NORTHERN CORRESPONDENT

"In reply to yours . . ."

Recent articles I have contributed to the *Bulletin* have brought forth

from Members many interesting and helpful letters, together with comments and questions on several matters. I have written personally in reply to each letter but in view of the interest shown have requested the Editor to allow me to give a general and enlarged answer to two of the main subjects raised.

More about the mercury-vapour light-trap

It has been rather surprising how many Members have felt that their use of the 'm.v.' trap has left much to be desired. One rather comical comment was from a friend in the South who remarked that he "had more broken bulbs than moths to show for his efforts". On this point of broken bulbs be it said that most of us learn the hard way. Ideally, of course, the bulb would prove most effective if entirely unscreened and allowed to shine forth unhindered. Very unfortunately our climate simply will not permit such a proceeding. In some way the bulb must be protected even from light rain, and moreover, the unexpected gust of wind which may drive in just a few heavy drops must be equally feared. It has been suggested that a transparent basin placed over the bulb is very useful. Personally I have found that whilst this method keeps off the rain very well indeed, the heat builds up inside the cover and cracked bulbs are the net result anyway. I therefore return to the method outlined in my previous article. A piece of clear Perspex or similar material is used. It should be of roughly the same area as the trap itself. It is screwed on to four upright legs which rise from the four corners of the trap, and is sixteen inches from the actual bulb and slightly sloping to allow rain to run down and over the back of the trap.

A second query about the trap concerns the danger of moths crawling out of the chamber before morn-

ing. I have never found this to be really serious. Provided that an adequate supply of hiding places is provided in the shape of egg-trays, the moths are quite happy to enjoy the light (if they do enjoy it, that is) until daylight, and then to take shelter under the trays. A far more important consideration, in my opinion, is the question of the moths which never actually enter the trap. It is an unfortunate fact that many of the choicer species simply 'hang around' or at best settle on or near the trap. So far as garden recording is concerned I make a point of taking out a strong torch and examining the traps and immediate surrounding area before going to bed. In this way some at least of the species which would otherwise be missed completely are obtained. Looking back at my own records I note that of the twenty species I have recorded as new to my district two were found resting outside the trap and another species, taken only three times, was on every occasion found resting in the radius of the light but on a wall close by.

Finally, before leaving this subject I might add that the question of timing devices has been raised. I use a very helpful device for my 'hot cupboard' and am aware how useful such timing mechanisms can be, but I do not favour them for the 'm.v.' trap. Two main objections, amongst many others, will serve to illustrate why they are not suitable. We have already mentioned cracked bulbs. It is a fact that from time to time, and in some summers far too often, we have nights when 'lighting up' is simply out of the question. No matter how the bulb was protected it would be shattered in no time. It need hardly be added that you might overlook the fact or be away from home for the odd hour — and on comes your light and 'pop' goes your bulb. The other obvious point

is that you may well be away from home unexpectedly for one or more nights. A timing device, unless duly switched off beforehand, will result in a useless and wasteful mess of insects, which would help nobody.

More about assembling

I turn to these queries with extra interest because only an hour ago I was on the moors with a couple of females (moths of course!) but returned without success. It seems that this has been the unfortunate experience over and over again of many of our Members, and they would like to know what they are doing wrong. I would suggest that they are doing nothing wrong. More often than not conditions are against successful assembling. My office is less than a mile from fine heather moors and every year I have frequent opportunities to take Emperor Moth (*Saturnia pavonia* Linn.) females (surely they should be called "Empresses"!), Eggars (*Lasiocampa quercus callunae* Palmer), several of the 'tigers' and other suitable species for assembling, and be it said that very often they fail to produce results. I think two very important points should be realised. First, it depends what we mean by successful results. It must be remembered that in nature only one suitable male is required and provided this duly appears within, say, the ten days after the female has emerged, then all is well. On the other hand we make a hasty trip to the area, impatiently spend an hour or so waiting and then return empty-handed. The other consideration is that most species mate at special times and when conditions are just right. We can make the first provision through experience (for very few of the text-books give us any guidance on the matter), but as for conditions you just have to hope for the best. A few pointers may help. Undoubtedly the great enemy is wind. Today my reason for lack of

success was a gusty wind which rendered the calling of the females quite ineffective. Similarly a cold wind will prevent any mating flight of most species. Bright sunshine is not essential, indeed, I have always found a still, cloudy day to be best — the calm before a thunderstorm is ideal and on two occasions I witnessed fantastic sights on such days. Females are at their best in many species about twenty-four hours after emergence but I have found them effective up to a fortnight later. If the weather is unsuitable it is wise to keep the females in a cool, fairly dark place until they are required.

Finally a point which need hardly be raised but does cause some failures. Many of us keep our pupae indoors, or in garden sheds, depending how long-suffering our women-folk happen to be. This often results in the captive females being forced a few days before their wild relatives on the moors and hills. It is wise to delay the emergences of your moths by keeping the pupae in a cellar or similar suitable place until it becomes fairly certain that emergences in the wild can reasonably be expected to be taking place.

W. E. Collinson, F.R.E.S. (247).



PRODENIA LITURA FAB. — A NEW PEST?

The horticultural trade press has recently been reporting the appearance of *Prodenia litura* Fab., the Mediterranean Brocade or (as the National Agricultural Advisory Service will have it) the Mediterranean Climbing Cutworm, in increasing numbers. That it has already reached the level of a pest is shown by the fact that one grower recently reported removing over one hundred larvae by hand from a house — measuring 150 by 30 ft — of chrysan-

themums (*Chrysanthemum* sp(p)). These larvae he destroyed.

The larvae have been reported from several counties during the past year, especially from Norfolk, Kent and Surrey, though it is likely that the insect may be much more widespread than these reports indicate. Most horticulturists, however, tend to lump all larvae together as 'cutworms' and leave it at that, so that many larvae may have been found but not identified.

There is some speculation amongst growers as to the origin of *P. litura* in this country. South (1961) states that the adult has been reared from larvae found in imported Tomatoes (*Lycopersicum esculentum* Mill.), and many growers use empty, imported, tomato-trays for packing their own produce. However, when one remembers that a great deal of horticultural material is produced on the Continent, rooted plants of Carnations (*Dianthus caryophyllus* Linn.) from Sweden, roses (*Rosa* spp.) from Holland, chrysanthemums from Malta and the Canary Islands, and geraniums from Portugal being imported especially, and at very regular intervals, the chances of introducing an alien insect seem not so very remote.

It may be of interest to note that the insect is proving difficult to destroy and a new insecticide has had to be used. This is 'D.D.V.P.', a product of C.I.B.A. laboratories of Basle, Switzerland. Even this insecticide will only kill young larvae up to one inch in length.

For further information on this pest, may I suggest that an article in the 'Grower and Prepacker' for December 14th 1963, which is accompanied by an excellent photograph of the fully grown larva, may be of help?

20.12.63.

A. J. Tuton (2639).

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A QUICK METHOD OF RELAXING LEPIDOPTERA

During the last few years reference has been made in various publications to the use of a syringe filled with warm water for relaxing stiff or papery butterflies and moths. A few days ago a friend bought me a 5 c.c. syringe and as I had a number of large tropical butterflies waiting to be set I decided to try this method of relaxing and was very much amazed at how quickly it worked.

I injected ten butterflies with warm water and by the time I had finished injecting the last one the first one was ready to set! All of them set very easily. My only hope is that they don't 'spring', but the answer to that will be found in a few weeks' time. Providing they are left on the setting-boards long enough I don't see why they should 'spring'. I sincerely recommend all lepidopterists to try this easy method of relaxing. There is no long waiting period and no fear of mould forming. The needle of the syringe causes no damage to the insect's body.

As some readers probably know, the syringe can also be used with oxalic acid for killing hawkmoths and large silkmths. I have not tried this myself, and would be interested to hear how effective this method is.

27.2.64. Terence F. Knight (3190).

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NEWLY HATCHED LARVAE

When dealing with newly hatched lepidopterous larvae, I find that when plastic or metal boxes, etc. — in which the foodplant is not supplied with water and consequently dries up — are used, many larvae are lost due to their disappearing in the curled leaves. There is also the bother of having to supply fresh food, which

is laborious to say the least.

I find that the best plan is therefore to rear the caterpillars inside a kind of sleeve. A celluloid cylinder cage, using a tobacco tin bottom and a nylon stocking top, a hole being bored through the tin to admit the foodplant (see *The Amateur Entomologist* Vol. 9, Practical Methods and Hints for Lepidopterists, fig. 12), is ideal. The types of apparatus shown in figs 4, 5, 9 and 10 of the aforementioned publication have been used with success by me. Ordinary sleeves can of course be used, but inspection is then hindered.

The top of the celluloid cage is best stuck on to a cardboard ring, as the use of an elastic band tends to cause all the contents to fly about when the lid is removed. A cellophane sleeve is also useful and can be made as given in 'Practical Methods'. When using it I reinforce the top with a further cardboard ring, and make a slip-on lid as above, for the same reason. An extremely simple cage on the basis of the lampglass cage and using an inverted tumbler is again useful.

With these cages it is easy to introduce more larvae. The young caterpillar is picked up on a fine, damp brush, the complete body of the cage is lifted from its base, or in the case of the cellophane sleeve the lid is slipped off to admit the larva, and the larva is placed on a leaf of the foodplant.

I find this method convenient for forcing ova, when the cages must be kept indoors, and using it I have been able to get ova of the Winter Moth (*Operophtera brumata* Linn.) to hatch a month earlier than usual and to have the larvae, feeding on hawthorn (*Crataegus* sp.), a fair size before the eggs are hatching in the wild. The method is in fact particularly useful for this species, as the caterpillars bore into the buds or spin together a few leaves and are very difficult to

find when the leaves have dried up. (Such a difficulty can be avoided by ordinary sleeving, but this is not always convenient.)

2.4.64. Brian Coles (3533J).

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SETTING FOR UNDERSIDES

Showing one's collection to friends and well-meaning acquaintances usually provokes comment on the relative beauty of differing species. Two specimens next to each other excite the opinion that one is much prettier than the other, and when it is pointed out that one shows only the underside of the same species as the other the result is often an expression of disbelief. I have always found this disbelief to be faintly irritating. I myself always know which side is which and with the single-mindedness of the collector feel it should be obvious to everyone else. After all, do not the legs sticking out from the body make it obvious? Apparently they do not.

I suppose it has been a well-established convention for a considerable time to set butterflies upside down to show the underside. Certainly no other way ever occurred to me until I happened to be looking over the collection in the Royal Ontario Museum in Toronto. Here I noticed that a number of specimens had been set with the pins passing laterally through the bodies and the wings had been folded over the back, and thus to one side. Of course, it was obvious that what could be seen in insects set in this fashion could only be the underside. This way of setting I found attractive and I have experimented widely with it recently. Some details are passed on in case anyone might be interested.

Apart from obviously showing the

underside in what is perhaps a more natural way than the normal one, this style of setting takes up only half the space of the more conventional way—a blessing for those like myself who find storage an ever increasing problem—and if one sex is set with the left side uppermost, and the other sex the opposite way, males and females may conveniently be arranged side by side. On doing this for the first time I was surprised to see the extent of the difference in wing size and shape between males and females, that I had not realized before. One obvious disadvantage of course is that with the wings folded the uppersides are obscured and lifting a specimen set in this way out of its drawer will not show anything different. This might be overcome by removing the wings from the one side but unless the specimen is something unusual the upperside pattern can be seen in other specimens. Unusual ones would more than likely be set to show the upperside anyway.

The actual technique of setting this way is a little different from the conventional one but not any more difficult. The usual considerations are important, having a vertical pin being doubly so, and strict attention has to be paid to the position of the wings. Care must be exercised in placing the pin in the thorax, for it is very easy to put it too close to the gap between the first two pairs of legs. In pinning the specimen on the setting-board a wide groove will be found useful, since with larger specimens space must be allowed for the wings to meet naturally above the body otherwise difficulty will be experienced in getting them to lie flat on the board.

In arranging the wings in position those which lie underneath should be moved first, and held in position whilst those above are being arranged over them. It will be found neater

if the pairs of wings coincide as closely as possible, as wings out of line in this position tend to look very untidy. It may be found that the legs stick out at odd angles and a couple of pins to hold them close to the body is desirable. In arranging the antennae it will be found in many species that there is a tendency for them to be obscured by the costal margin of the forewing unless they are set pointing forwards at a high angle. I usually pin two pieces of paper across the groove, with the antennae between them inclined towards the side that the wings are on and only separated by a small distance from each other. Support of the body will be necessary in a similar way to any other setting-method.

5.2.64. Anthony M. Holmes (3337).

THE PURPLE HAIRSTREAK BUTTERFLY AT 'M.V.'

It may be a matter of interest, in view of the recent letter which has appeared on the subject of unusual responses in certain Lepidoptera to light (*Bull. amat. Ent. Soc.*, 22 : 139), to mention that twice during the 1963 season lone female specimens of *Thecla quercus* Linn. (Purple Hairstreak Butterfly) arrived at mercury-vapour light at Alice Holt Forest, Hampshire.

The first arrival was to my 125 watt 'm.v.' light, which was running in the centre of a 100 yard wide clearing, at approximately 10.30 p.m. B.S.T. on August 5th.

The second came to a friend of mine's 400 watt 'm.v.' which was running on the same site two evenings later, between 9.30 and 10.00 p.m. B.S.T.

Specimens of another species, *Thymelicus sylvestris* Poda (Small Skipper

Butterfly), could often be seen roosting on grass stems in close proximity to our 'm.v.' in this same clearing, but in spite of constant disturbance from blundering and fluttering moths they made no attempt to move.

Of the above-mentioned species I would have expected the latter to be much more likely to respond to 'm.v.', given reasonable excuse, than the former, especially when one remembers that certain foreign Hesperidae fly freely at dusk.

20.3.64.

E. A. Sadler (2966).

CARABUS GRANULATUS LINN. IN MIDDLESEX

Recently (February 1964) woodmen of the local Council started to clear out the dead timber and scrub from the woods adjoining the River Crane. The woodland is marshy and subject to occasional heavy flooding, and consists of willow (*Salix* spp.), Elder (*Sambucus nigra* Linn.), some very old hawthorns (*Crataegus* sp.) and a few alders (*Alnus glutinosa* (Linn.) Gaertn.). Many of the willows were rotten and some had fallen over and these were to be cut up and burned on the spot together with the scrubby undergrowth of Bramble (*Rubus fruticosus* Linn.). Before work commenced I asked the foreman if he would keep his eyes open for any beetles or unusual insects, and supplied him with several tins. A few days later the tins began to return to me, and all were jammed with specimens of the beetle *Carabus granulatus* Linn. On checking with Dr B. P. Moore's latest list of British Carabidae and their distribution, I found that *C. granulatus* was not recorded as occurring in Middlesex. On questioning the woodmen and making my own investigations I found that the beetles were hibernating in groups of up to ten beetles

in the old willow boles. Each group had chosen a dead and rotting bole or stump and had channelled out a hibernaculum below the bark or within the rotten wood below the bark. The situations were thoroughly damp and the beetles were very lethargic when found, although they quickly became active when placed into tins. The place and gregarious method of hibernation I feel are worth noting, and also the abundance of the beetle in a wood which is often deep in water is interesting. It would be well worthwhile searching other woodlands adjacent to water in the County to see whether this beetle, which has not been recorded from Middlesex before, is also present there. I would be interested to hear whether coleopterist Members have found this beetle in similar circumstances elsewhere in the country.

27.2.64. P. W. Cribb (2270).

REFERENCE

MOORE, B. P. (1957). *Entomologist's Gazette*, 8: 129-137. The British Carabidae (Coleoptera), Part I: a check list of the species.

After the parasite cocoons had been completed, I examined the underside of the larva, but could see no signs of any puncturing. The only thing evidently wrong with it, apart from diminished size, was that it could not grip flat surfaces with its claspers.

This larva lived for ten days after the emergence of its parasites. I had tried, without success, to make it start feeding. It just clung on in the arched position until expired.

The braconid flies emerged thirteen days after the larvae had formed the cocoons.

The larva, while alive, was very active if its hindquarters were touched, and it would swing its head round as if trying to ward off further attacks.

R. F. McCormick (3375).

REFERENCE

STEP, E. (1932). *Bees, Wasps, Ants and Allied Insects of the British Isles*. Frederick Warne, London. p.190.

OBSERVATIONS ON THE BRACONID MICROGASTER ALVEARIA FAB.

Observations have been made in Step's 'Bees, Wasps, Ants and Allied Insects' that when the larvae of *Microgaster alvearia* Fab. spin their wall of cocoons under the looped body of their host Geometrid larva, they leave by the under surface in succession.

I am of the belief that they do not break the skin—which is what Step's observations imply—but that they emerge through the alimentary tract, and from there they form up.

I formed this theory after observations on a larva of *Hemistola immaculata* Thunb. (Small Emerald Moth) which was attacked by *M. alvearia*.

'TWO PROBLEMS' — POSSIBLE ANSWERS

Mr H. V. Danks (2907) described two observations on insect behaviour (*Bull. amat. Ent. Soc.*, 22: 121-2). Perhaps I can throw a little light on them, however speculatively.

Concerning the unidentified Nematoceran, I can offer two suggestions for the observation, both suggestions being contained in the original article, but not enlarged upon.

(1) The legs were, indeed, being used as antennae. Perhaps experiments in various controlled environments could be performed, using the insect with and without its antennae. It is not unknown for insects to use their forelegs as antennae (*cf.* the Protura). Doubtless other flies use their forelegs in the same manner, but I do not know enough about flies

to cite any examples.

(2) This is an example of behavioural aposematic mimicry. That is, the fly was (if you will forgive the teleology) 'trying' to look like an ichneumon fly. This idea is supported by the reported fact that the forelegs were black and white-banded—a true example of aposematic colouring.

One might even venture to suggest that the insect, while looking like an ichneumon (or related wasp), does, in fact, use its legs as antennae. In view of the common occurrence amongst the Diptera of mimicry of the Hymenoptera, I think that this explanation is very likely.

As for the observation concerning the Tipulid, I am at a loss to account for it. Similar behaviour may be observed in the stick insect—could such behaviour be common amongst long-legged insects? If so, it might be a mechanical result of having long legs, and have no true behavioural significance at all. I have seen it stated that in stick insects, swaying after having been disturbed is a behavioural effect imitating a twig in a breeze. If this were the only reason for it, clearly one could draw no lessons from the stick-insect on this point of behaviour.

Finally, I would like to draw attention to a short note of mine in *Bull. amat. Ent. Soc.*, **21**: 68. The aspect of aphid behaviour there described may be a mechanical necessity. Certain of the flight muscles are inserted in the pro- and mesothoracic coxae. These are the so-called 'direct' flight muscles, involved in controlling the flight characteristics of the wing, and not used actually to work the wing up and down. Perhaps raising the mesothoracic legs renders the control of the hindwings for take-off more easy. Research on bee flight (Pringle) has shown that the hindwings act as ailerons. This would necessitate the action of the direct wing muscles of

the hindwing. While I have not been able to find any reference in the literature to the necessary musculature (and I have looked through a lot of the insect literature in the Cambridge zoology department!), I postulate that the raising of the mesothoracic leg is necessary for the sufficient control of the hindwing during take-off, due to the particular sites of insertion of the direct wing muscles involved.

19.3.64.

J. Vincent (3027).

The second of the behaviour patterns noted in the original article in *Bull. amat. Ent. Soc.*, **22**: 121-2 might also be an example of aposematic behavioural mimicry, in this case in imitation of the very similar movement shown by spiders when their webs have been touched by other spiders—which are thus 'warned off'—or by unwanted insects—which are shaken out of the web.

Dr C. B. Williams (*in litt.*) has drawn my attention to the fact that Phalangids (harvestmen spiders) perform similar movements when disturbed.

The behaviour pattern could well serve to render the insect invisible, or at least unrecognisable as suitable prey to a possible predator, and Dr Williams has allowed me to quote some relevant observations he made in Panama many years ago: "The species I observed in Panama was a large Tipulid which I frequently saw sitting on tree-trunks. The bobbing movement—which seemed to start when it became conscious of my presence... sometimes became so rapid that the whole insect became practically invisible. I felt sure at the time that it was a protective device."

It may be too that the 'bobbing' movement of Tipulids is a means of accelerating metabolism in preparation for flight, although this seems unlikely (as does the suggestion that quick take-off is facilitated if the

insect is already in motion), for the movement is sometimes performed for very long periods after settling.

Has any Member made any really detailed observations on this sort of phenomenon?—*Editor*.

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INSECTS, FOODPLANTS AND PLANT RELATIONSHIPS

2. Grasses and Greenflies

In my article on "Butterfly Botany" (Airy Shaw, 1960) I suggested that an insect's 'classification' of plants was "likely to reflect broad similarities (1) of chemistry or biochemistry; (2) of anatomy; and (3) of ecology." In the May *Bulletin* (pp. 55-6) I gave some examples of the probable operation of the first of these three types of similarity, and sought to show what a suggestive light they throw on the disputed relationships of two plant-genera, *Buddleja* and *Plantago*. The present brief note touches principally on the second category, and illustrates something of the possible influence of structural and anatomical similarities upon an insect's choice of foodplant within a single plant-family.

Some years ago, I had the opportunity of studying the habits of an interesting grass-feeding aphid, now known as *Hyalopteroides humilis* Walker (= *H. dactylidis* Hayh., *H. pallida* Theob.). This species is, so far as is known, strictly confined in this country, and indeed in Europe, to the common Cocksfoot Grass (*Dactylis glomerata* Linn.). I have never found it, and I know of no record of it, upon any other host-plant in Britain. It is probably a widespread and, at least in some years, a common aphid; but, owing to its habits, it is very inconspicuous and easily overlooked, for it lives and feeds in the angle of the trough

formed by the strongly-folded leaf-blades of the Cocksfoot, where anything up to thirty individuals may be found, in single file, closely adpressed to the mid-nerve. Their pale lemon-yellow colouring and somewhat narrow and elongate form help them to merge into the line of the mid-rib.

Now this aphid is well-known in the United States, where it occurs on *Dactylis*, as it does in Europe. *D. glomerata*, however, is an introduced grass in the U.S.A., although by now thoroughly naturalised and widespread, and often looking quite native. But *Hyalopteroides humilis* has also been found there on a native American grass, *Tridens flavus* (Linn.) Hitchcock, which is not closely related to *Dactylis*. I therefore asked my colleague, Dr C. E. Hubbard, a world authority on the Graminae, for his comments on this, and I would like to quote from a paper I wrote at the time (Airy Shaw, 1946, p. 32), the substance of his remarks.

"The basal sheaths of *T. flavus* are . . . 'compressed-keeled'—as in *Dactylis*—and I would therefore expect the leaf-blades to be conduplicate, similarly to those of the cocksfoot. The protection afforded by such strongly conduplicate leaves, and . . . the presence of a zone of thin-walled motor cells over the mid-nerve, from which the aphids could most easily suck the sap, would seem to be the most probable explanation for this choice of an alternative host-plant."

This case thus seems to provide an instructive example of how a normally strictly monophagous ('single-foodplant') insect may have the possibility of finding its basic requirements as to biochemistry and ecology (including protection), but especially anatomy, met in an alternative foodplant—even though not a very closely related one—within the same family.

A second *Dactylis*-feeding aphid,

Rhopalosiphum davisii Mordv., is known on occasion to attack species of the grass-genus *Elymus* (lyme-grass) in North America. Dr Hubbard suggested that here the common factor might be "the similar general leaf-anatomy and epidermal cell structure, for *Dactylis* and *Elymus* belong to two very closely related tribes" (*loc. cit.*). During the past twenty to thirty years much light has been thrown on the inter-relationships of the grasses through the study of internal and external details of their leaf-anatomy and epidermis structure, and it would appear that in this case some of the details are appreciated by the aphids also!

31.12.63. H. K. Airy Shaw (545).

REFERENCE

- SHAW, H. K. AIRY (1946). *Ent. mon. Mag.*, **82**: 30-34.
On some problems connected with *Hyalopterus dactylidis* Hayh. and *Hyalopteroides pallida* Theob. (Hem.-Hom., Aphididae).
— (1960). *Bull. amat. Ent. Soc.*, **19**: 62. *Butterfly Botany*.

ENGLISH NAMES

There is a fallacy that as soon as any object or phenomenon is given a name, understanding of it is thereby increased. This is because we can at once talk about the new thing without knowing anything about it whatsoever, other than the word that has been adopted to represent it. It can be reported in the newspapers, talked about at meetings and made the subject of papers in journals, all on the basis of pure hypothesis. Nomenclatorial jargon proliferates and international commissions are formed to standardise terms for things about which future generations will laugh that we know almost nothing and will curse us for our premature action. Nomenclature to a scientist is like fashion to a woman—and is about as enduring. When we are young, we want the latest; as

we age, we cannot bear to see our work ungratefully tossed aside, and protest that our standard works and check-lists must still be thought the very best.

The best nomenclators imagine that their efforts will eventually lead to an eternal bliss of stability. This is never reached, for as soon as the taxonomists see that there remains only tidying up to be done in their field, they transfer to problems of a new order of finesse. Species are split up into microspecies that were not envisaged as essential to the original nomenclature (for example the botanist's brambles (*Rubus*) and hawkweeds (*Hieracium*)). A new fashion develops of using trinominals instead of binominals, because, as with birds, we think that we know what a subspecies is.

It is small wonder that the lay mind that only enjoys watching those things that have always excited Everyman's curiosity should seek to escape from chasing nomenclatorial shadows by protesting that there are names in his own language for all the things that he wants to know about. If our layman or amateur still wishes to live by the knowledge revealed in the Mediaeval herbals there is reason in his approach, otherwise he is utterly mistaken. Anyone who intends to recognise as distinct all the species in the latest edition of South's '*Moths of the British Isles*' must work with a nomenclature that has not grown by tradition but is the modern work of a few individuals: many of the species have only been recognised to be British, or even been described by entomologists, in the last fifty years. This 'English' nomenclature is as much open to objection as any 'scientific' nomenclature.

The usual claim is that 'English' names are easier to learn because they are combinations of vernacular words. In many cases they are nothing

of the kind, but are identically the scientific names (e.g., rhinoceros) or translations or corruptions of these. Certainly the 'English' names can, in many cases, be said to have no more merit than their scientific counterparts in being actually descriptive of the objects concerned. Many are in fact supremely ridiculous, particularly those of 'Microlepidoptera', which have not had to withstand the test of usage because they are quite properly ignored. Would you keep a Rolling Carrot Flat-body (*Agonopterix rotundella* Douglas) in your collection? No doubt you would consider a Ruddy Streak (*Parocystola acroxantha* Meyr.) and an Unexplained Sober (*Sophronia humerella* Schiff.) a fair exchange for an example of Cribb's Manchester Signal (*Euclemensia woodiella* Curt.). How would you feel if, on thumbing through a new edition of a check-list, you found that two moths that you had written about had been arbitrarily dubbed Uffen's Claw (*Anarsia lineatella* Zell.) and Uffen's Case (*Coleophora alnifoliae* Barasch)? It is particularly galling when you realise that you could have dedicated another Case that feeds on Nut (*Corylus*) to the author of the list!

Vernacular names are all very well when they identify entities that are recognisable to the layman, but it is not in these cases that he objects to the use of scientific names. Everyone is happy to call a *Dahlia* a dahlia: it is when the additional effort of recognising the species is called for that the brain jibs at a binominal and asks whether, in some other tongue, this particular thing can be regarded as just another object, without having to recognise in its name any relationship with other things. We have to admit that he who is not prepared to learn the 'double-barrelled' name for a beast most likely refuses because he has no real conception of the animal as

an entity. He has no more interest in a mere name if it is vernacular than if it is not. The scientific name repels the novice simply because its unfamiliarity shows him starkly that his understanding of the beast in question has not been increased one whit by hearing it named. And so it should do. A name should only become familiar when it becomes meaningful.

1.3.64.

R. W. J. Uffen (1660).

REFERENCE

SOUTH, R. (1961). *The Moths of the British Isles*. 4th edn. Frederick Warne, London. Series I and 11.

THE NAMING OF INSECT WING VEINS

In order to identify living organisms correctly it is necessary not only to have a knowledge of structure but also to know the names of different structures. If a very large number of different species is incorporated into a broad group then only a relatively superficial nomenclature is needed, and this holds good for the insects. The Hymenoptera and the beetles can be separated by the presence of either one or two pairs of membranous wings. Wingless Hymenoptera, of course, will require a further description.

The smaller the grouping, however, the more detailed and complex becomes the nomenclature required to describe the differences. In this respect, where insects are concerned, the three main identification points are the mouthparts, genitalia and wings. In order that students of different groups may have some common ground for the exchange of information and for correlating discoveries, it is essential that the names of appendages and parts of the body surface should be standardised. Unfortunately, where the names of

wing veins are concerned, the position at the moment is far from ideal.

There are two methods by which structure can be utilised for purposes of identification, and these were probably first enumerated in an article in the proceedings of the American Association for the Advancement of Science, about 1893.

To put the first briefly, a search for differences of structure within a large and recognisably compact group can be made and the members of the group separated on the basis of possession or not of one or more of these differences. Little or no consideration of the function of these diversities of structure is made.

The second method is to study a particular appendage, sclerite (body plate) or internal organ, with reference to its function, and attempt to trace its phylogenetic development within the chosen group. The effects of natural selection within the group on the insects as individuals can then be related to the development of the particular organ and a provisional classification made. Another appendage is then selected and a similar procedure followed. If the second and other similar studies vindicate the provisional classification the ground is gradually prepared for the tabling of a consistent group of features to enable specific identifications to proceed. If the deductions are valid, the individual records of the changes due to natural selection should not contradict each other.

In order to study the phylogenetic changes due to natural selection a useful primary starting-point is to examine the fossil ancestors of the particular group of insects being studied. The very nature of the preservation, the tremendous pressures involved, the heat of organic decomposition, and bacterial action specify the most propitious circumstances for the preservation of the exoskeleton, to say nothing of the

much softer internal organs. The difficulties that arise in the use of palaeontological evidence for determining evolutionary trends in insect development can be summed up under three headings: the difficulties mentioned above, the fact that whole insect Orders have arisen and died out during earlier eras, and the fact that a range of intermediate specimens, the missing links, from wingless to winged types have not been found.

However, data from this and present day sources have enabled the insects to be grouped into Divisions and Orders. The Upper Carboniferous Era supplies the greatest number of remains and the only two extant Orders which can be seen with reasonable certainty to share a common origin with extinct Orders are the dragonflies (Odonata) and the mayflies (Ephemeroptera). Their extinct relatives were, respectively, the Prodonata from the lower part of the Upper Carboniferous and the Protephemeroptera from the upper levels of the Upper Carboniferous. There is some doubt as to when our present day dragonflies actually evolved; certainly when the Protephemeroptera evolved, the Prodonata had already undergone a radical change in another direction, later to die out altogether in the Permian Era.

Our first true Ephemeroptera arrived in Lower Permian times. This, then, is a measure of the degree of certainty which can be placed on prehistoric records of two Orders of present day insects which seem to bear the greatest affinity with their forbears. In the case of the beetles (Coleoptera), however, the earliest specimens found are represented mainly by small pieces of elytra occurring in the Lower Permian, while the earliest sawflies (Symphyta) from the Mesozoic Era had already evolved fairly specialised wings.

It is the relative ease with which the wings of insects can be studied, together with the visible signs of complex evolutionary changes, which make these appendages particularly convenient to study, and hence they have been the particular target for many taxonomists.

The main venational feature of most palaeontological specimens is the distad branching of the main veins (accessory veins), and the irregular network of little veins, termed by Tillyard the archdictyon, in the spaces between the main veins. This can be seen today in the dragonflies and mayflies. Some, however, of the Palaeodictyoptera (the first of the line of fossil insects) had begun to regularise the network into even rows of cross-veins.

Fig. 1 shows a fossil insect from Commentry, France. It will be observed that only the femur and tibia of the front legs remain and the distal head appendages are missing. The most remarkable phenomena which this fossil presents are the lateral expansions of the body, not only on the abdomen but also on the thorax in front of the wings. Many experts include this as strong evidence of the origin of wings—namely that these extensions first functioned as aids to gliding. This would mean that initially they would be incapable of being folded back over the body, and this is borne out by the fact that in fossils where both body and wings are preserved the majority have their wings extended. It might also be noted that in the Suborder of the present day dragonflies which contains the largest members of the Order the species hold their wings extended when at rest.

The fossil shown in Fig. 2 was found in Indiana, U.S.A. It is included here to illustrate the excessive branching of the main veins and the archdictyon. The latter covers the whole wing but is confined in the

diagram to a small area, partly to avoid obliterating the main veins and partly because it is a painstaking task to fill in the whole diagram. Discounting the accessory veins, those that occur in a quite haphazard manner even in different specimens of the same species, the main veins do usually split up into recognisable branches, and these are indicated by numbers placed after the main vein capital letters. The Radius has its first branch typically uniform but the second branch bifurcates at various stages along its length and is therefore called the Radial Sector (Rs).

The nomenclature of the main veins—deduced from a study of fossil and generalised (*i.e.*, showing an affinity with fossil relations) present day insects—gives the main longitudinal veins reading successively from the leading edge of the wing as Costa, Subcosta, Radius, Media, Cubitus and the Anal veins. Though the use of these names was first put on to a firm basis by Comstock and Needham (1898), they in turn acknowledge the initial classic work of Redtenbacher (1886) who, whilst in turn borrowing all the terms except the Media from a variety of much earlier sources, did at least specifically quote the above terms in their above order.

At the expense of dangerous generalisation it might be said that taxonomists have studied three main phenomena in their efforts to place the correct label to a particular vein. These three studies have been based on the tracheation of the wings of immature insects, both nymphs and pupae, the corrugation of the wings and the apparent articulation of the main veins with sclerites at the base of the wings.

Such is the modification that evolutionary specialisation has wrought in the wings of most of our insect species that a knowledge of

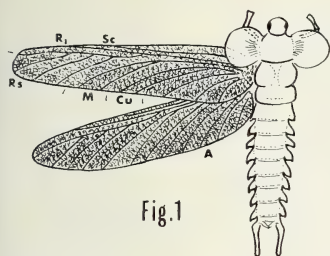


Fig.1

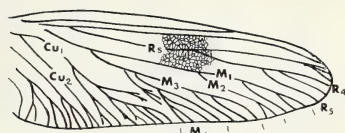


Fig.2

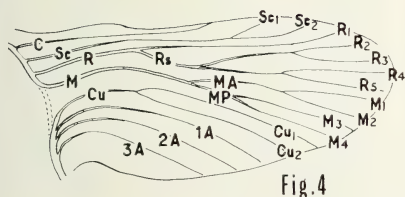


Fig.4

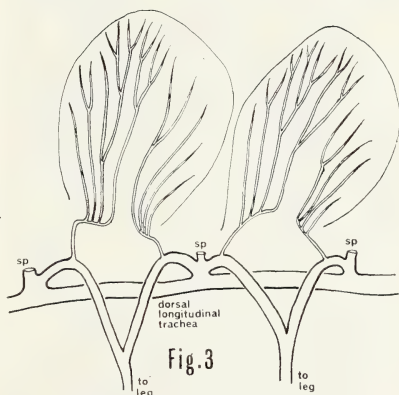


Fig.3

Fig. 1. *Stenodictya lobata* (adapted from Handlirsch)—for key to veins see Fig. 4.

Fig. 2. *Paolia vetusta* (adapted from Handlirsch).

Fig. 3. Hypothetical nymphal thoracic tracheation (adapted from Chapman).

Fig. 4. Hypothetical nymphal wing-venation (adapted from Comstock)

C — Costa; Sc — Subcosta; R — Radius; Rs — Radial Sector;

M — Media; MA — Anterior Media; MP — Posterior Media;

Cu — Cubitus; 1A — 1st Anal; 2A — 2nd Anal; 3A — 3rd Anal.

all three methods of 'labelling' is an advantage if the origins of the wing veins of different orders are to be understood with equal facility.

The study of pre-imaginal tracheation holds, for me, the greatest attraction, partly because of the bold and imaginative work which Comstock, Needham and earlier workers put into their researches and partly because of the fact that some of the venational puzzles which arise can only be solved by the application of their findings. In the majority of pupal and early nymphal wings the courses of the tracheae follow a beautiful and simply planned layout even though in the imaginal wing the veins show a completely different and specialised plan: another ex-

tremely useful detail of the wing pads is that the base of the pad is relatively broad and hence the individual branches of the tracheae are separated and easily discernible.

In the majority of insects, the tracheae extend into the growing wing bud and supply an increasing volume of air to the tissues. These tracheae arise, in a typical arrangement, from the same tracheal branch that supplies a leg. R. N. Chapman in the 1890's produced some exceptional and original work in this respect.

Fig. 3 represents the tracheation of the thorax of a typical, generalised, immature insect viewed from the side. It differs hardly at all from the more generalised insects, and the

pattern evolved by the more specialised insects can still be traced and correlated with this layout. The main veins mentioned earlier can be seen in the diagram and it is of interest to note that where, in some specialised insects, the metathoracic spiracle is absent, a rudimentary appendix-like trunk is present on the dorsal longitudinal trachea, denoting the spiracle's original presence.

Fig. 4 represents a hypothetical nymphal wing, and in some of the more primitive insects the division of the main veins into two distinct groups (as shown for the nymphal wing) has given rise to the names costo-radial and cubito-anal groups. In these insects, *Media* is obviously part of the costo-radial group. In most other groups the gap between the two basal tracheae is bridged to form one continuous trachea, and when this happens the *Media* tends to migrate down towards the cubito-anal group of veins and become one of them.

The advantage of this particular study is that in many insects the tracheae grow out into the expanding wing membrane which, having originated as a pleat or fold in the body integument, consists of an initially separate upper and lower surface. As the wing develops, the spaces between the tracheae fuse together and the course of a trachea outlines either closely or approximately a main vein. At various stages in the wing development additional veins (cross-veins) are laid out as linear gaps between areas of fusion of the upper and lower surfaces. Hypodermal cells underlying the surface cuticle of the wing have their bases elongated to reach down to the interior of the wing and thus are able to deposit an increasing layer of hard chitinous substance around the courses of future veins.

If the insect is a highly specialised one where the wing venation of the

mature insect is greatly reduced then at various stages the islands of fusion of the surfaces move about the wing, pushing the original tracheae, together with the cross-veins, further and further from their primitive arrangement.

The continual use above of the word nymph is to indicate that this account has up to now been concerned with insects whose wings develop externally, as the grasshoppers, dragonflies or plant bugs. With internally expanding wings which are only easily observed during the pupal stage, tracheation plays a limited part and diminutive tracheae called tracheoles supply sufficient oxygen. Only when the final rapid expansion is approaching do the tracheae play a major part in oxygenation.

The second method of naming the veins is based on the corrugations or fan-like pleating evident in many of the more generalised wings. The mechanical efficiency of this system of wing-bracing is evident if one considers the stiffness of a pleated paper fan compared with the original flat piece of paper from which it was made. In those cases where tracheation is suitable for study, its homology with the wing venation is usually straightforward. The same claim, however, cannot be wholly made out in the case of the corrugations.

The veins running along the top of ridges are termed convex veins, the others lying between them in the troughs being the concave veins. This arrangement can undoubtedly be observed, but the trouble is that the more accessory veins there are present the more pleated becomes the wing. Some of the additional veins too, as in the lacewings, lie halfway up a 'slope' of the wing pleating. There is, however, fairly general agreement with the following table (Imms, 1957 ; Comstock, 1918 ;

Longfield, 1960 in part ; - and others).

Convex veins	Concave veins
Costa (C)	Subcosta (Sc)
Radius one (R ₁)	Radial sector (Rs)
Anterior Medius (MA)	Posterior Medius (MP)
Cubitus one (Cu ₁)	Cubitus two (Cu ₂)
Anal veins	(Sometimes 2nd Anal, 2A)

Table 1 : Convex and concave veins of the 'corrugated' insect wing

Some Orders, the dragonflies in particular, present a problem in that the tracheation of some of the nymphs shows quite clearly that the Radial Sector trachea crosses over the first two branches of the Medial trachea. That this nymphal evidence only pertains to the heavy-bodied Anisoptera and not to the Zygopteran damselflies tends to cloud the issue. In the Zygoptera the evidence points to a complete transference of the Radial Sector to the Medial trunk, which can be seen as a

logical evolutionary step following the crossing over stage.

The two opposing systems of naming an Anisopteran wing are shown in Fig. 5 with convex veins indicated by a plus sign and concave veins by a minus sign. Fig. 5a represents the school of thought followed by Fraser, Longfield, Tillyard and others, while Fig. 5b represents the American and Continental beliefs of Comstock, Needham and Ris.

For a deeper presentation of the conflicting points of view on the venation of this particular Order see Corbet, Longfield and Moore (1960, pp.226-31), and Needham (1935).

The third method of naming the veins partly by the basal sclerites was developed by Ross (1936) in the case of the Hymenoptera. The members of this Order with their highly specialised wings lack the primitive

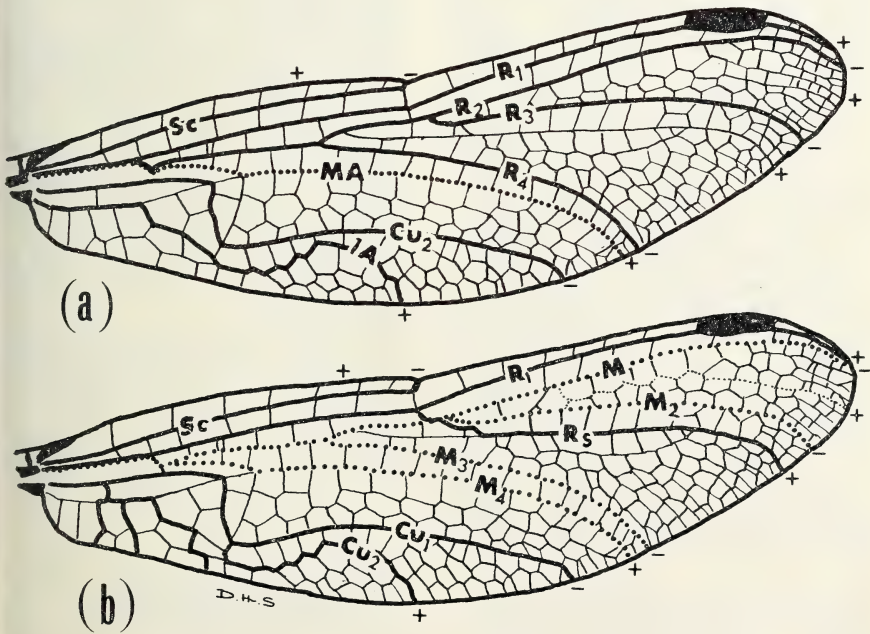


Fig. 5. - Sympetrum scoticum (Don) — Skipwith Common.

corrugations, and in addition to this a number of these species lay down their final wing venation prior to the penetration of the tracheae. Comstock (1918), unable to use either of the foregoing methods, traced a parallel between the development of the wings of certain Diptera and those of the Hymenoptera on which to base his venational interpretations. The wide phylogenetic difference between these two Orders caused Ross to reject this scheme.

He first endeavoured to find the present day Order most closely allied to the Hymenoptera, and in company with other experienced entomologists chose the panorpidae group, i.e., the scorpionflies, alderflies and others. From the analogous position of the Anal veins and corresponding axillary sclerites in the panorpidae Orders, 1A, 2A and 3A were fixed in a hypothetical hymenopterous wing. The parallel paths of the next two veins, Cubitus and Media, in the basal part of the hypothetical wing closely match those of the present day Hymenoptera.

Ross then left this part of the base and worked inwards from the leading edge of the wing. Costa and Subcosta with their connecting humeral cross-vein were identified. The remaining vein is then the Radius. The identification of the branches and cross-veins in the main part of the wing is beyond the scope of this brief preview and those interested should refer to Ross' paper on the subject. It is of interest to note, however, as Ross points out, that the positions of many of the supernumerary cross-veins correspond closely with those of the alderfly *Sialis*, in particular. 3.3.64. D. H. Smith, F.R.E.S. (2864).

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GREEK INVADERS?

During late February and early March this year (1964) a lepidopterist

friend of mine (not a member of the AES) went on a school trip to Greece. On returning, he told me that he had found on a Pine tree (*Pinus ? sylvestris* Linn.) a fairly solid nest, about the size of a coconut, containing many lepidopterous larvae. These he described as being about $2-2\frac{1}{2}$ inches long, coloured yellow with black tracings, and very furry. The hairs gave a severe skin rash. On the return home, however, they got loose in the train, and were all thrown overboard in the panic!

If anyone living or collecting near the main railway line between Folkestone and Victoria has heard anything of these caterpillars, or has actually found some, my friend and I would be pleased to hear from them. My friend says that the larvae were jettisoned over a stretch of about a mile, roughly half-way along the journey. There is a slight chance, of course, that the larvae have found some Pine, fed up, pupated, and the Greek whatever-they-are have started appearing before this article is published: so if any Greek Lepidoptera have been found in S. E. England, this will undoubtedly be the cause.

If anyone can give information, or suggest what species these larvae were, would they please write to me.

27.3.64. M. C. Watling (3606J).

[Mr Watling's address is 104 Frimley Road, Camberley, Surrey.—Ed.]

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ENTOMOLOGY IN NEW ZEALAND—1

New Zealand is often thought to be the southern hemisphere equivalent of the British Isles, but this is true only to a limited extent. The area of the three largest islands (103,044 sq. miles) is slightly less than

that of Great Britain and Ireland. The main islands extend between 34° and 48° S (the approximate equivalent of Tangier to Orleans in the northern hemisphere). New Zealand is the most isolated habitable large area of land in the world: the shortest distance to Australia is 1,150 miles.

The climate is temperate in fact as well as in name, at least in the lowlands. There, rainfall in most places averages between 20 and 80 inches annually, and is fairly evenly distributed through the year, there being no pronounced wet or dry seasons. Temperatures rarely rise above 90° F or fall below 30° F near the coast.

The country is predominantly hilly or mountainous, with few extensive plains. Much of the landscape is geologically young. The main mountain ranges were built up to their present heights during late Pliocene and Pleistocene times. Occasional severe earthquakes are a reminder that the process is still continuing in some regions. There are several active volcanoes in the centre of the North Island. All the higher mountains of both main islands were glaciated in Pleistocene times. The deeper glacial valleys in the South Island are now occupied by lakes, or, on the west coast, by fiords.

The flora resembles the fauna (discussed below) in its affinities and in its high degree of endemism. Before man came to New Zealand, forest clothed most of the country, with the exception of some dry plains and valleys—which supported tussock grassland—and the alpine areas. Scrub and fern covered only the subalpine areas, the regions recovering from natural fires and slips, and exposed ridge tops. Scrubland and fern-land increased greatly in area, following clearing (mainly by fire) first by Maoris, then by Europeans; while the latter planted

vast cleared regions with exotic pasture grasses.

In the far north the 'bush' was dominated by the splendid Kauri (*Agathis australis* Steud.), and other lowland forests comprised various species of *Podocarpus*, *Dacrydium* and broad-leaf trees, while the main mountain forests were dominated by southern beech (*Nothofagus* spp.). Fortunately some fairly large areas of the native bush remain, especially in the mountains, although often greatly modified by feral deer, pigs, goats and Australian 'possums'.

The lowland bush of New Zealand is correctly classified as subtropical rain-forest, despite the fact that the climate is subtropical only in the far north. The bush has the usual rain-forest characteristics of thick undergrowth, numerous climbing plants (*Rubus* spp., *Metrosideros* spp., etc.), lianes (*Rhipogonum scandens* Forst.), abundant ferns, tree-ferns, palms, etc. In many places the growth is so dense that one has to cut one's way through it. The southern beech forests are more open, somewhat like forests of *Fagus* spp.; but species of *Nothofagus*, like almost all other New Zealand trees, are evergreen. Generally speaking, the native insects are found only amongst native vegetation, few having adapted themselves successfully to exotic vegetation.

One of the most striking features of the New Zealand terrestrial and freshwater fauna is the high proportion of endemic species. Besides endemic species, some groups contain endemic genera, tribes, sub-families or even families. There are a number of animals belonging to fairly primitive groups which have become extinct everywhere else—the best known vertebrates are the Tuatara (*Sphenodon punctatus* Gray), native frog (*Liopelma* spp.) and kiwi (*Apteryx* spp.). These are known as 'palaeo-endemics'. Most of the fauna,

however, shows more or less close affinities with existing relatives from Australasia, the Indonesian-Malayan-Oriental region, Polynesia, or South America. There are also a few New Zealand animals with their closest living relatives in the Holarctic or Ethiopian regions (e.g., derodontid beetles).

New Zealand lacks native land mammals and snakes, and there are notable omissions in all the major orders of insects, which will be discussed in detail later. These missing groups are well-represented in Australia and New Guinea. Geologists see evidence for a north-westward extension of land from New Zealand towards New Guinea during Cretaceous times. That this did not form a continuous 'land bridge' is fairly clear from the absence of terrestrial mammals, snakes, etc. However, the ocean gap must have been much less than at present, and may well have been traversed by an archipelago, which enabled the ancestors of some of New Zealand's present fauna to 'island hop'. There is a suggestion that migration of land animals to New Zealand may have again been easier during Miocene times than at present. Whatever the exact geological history, however, it is clear that the more distinct elements of the fauna have been able to evolve in isolation for a very long time, perhaps about 80,000,000 years. The remainder are either particularly conservative from an evolutionary point of view, or have arrived in New Zealand more recently.

Coleoptera

There are about 4,500 'species' of New Zealand beetles described, but many of these are undoubtedly synonyms. Most of these were described last century by several entomologists working independently in Europe (mainly in Britain), and by Major T. Broun in New Zealand.

Broun was prone to describe variants as full species, as were the systematists in Britain. The Broun collection was not kept in New Zealand following his death, and this has definitely tended to discourage systematic work on New Zealand beetles since then. It is quite impossible to identify many species from the descriptions, so that the only certain means of determination is by comparison with the types, or with specimens previously compared with the types. As few of the types are in New Zealand, identification can be a very slow process.

Despite synonymy in the species already described, I believe that there are so many species, especially of small beetles, awaiting description, that the actual number of species may well exceed 4,500. Thus, in spite of difficulties in identification, the coleopterist in New Zealand can be fairly certain of bringing interesting novelties to the light of science. With so little known of basic taxonomy, there is naturally nothing known of the life history and ecology of most species.

All the great beetle families are represented in New Zealand, although there are but two species of Buprestidae. The Curculionidae comprise about 1,500 described 'species', while the following families (listed in order of decreasing size) also contain more than 100 described 'species' from New Zealand: Pselaphidae, Cerambycidae, Staphylinidae, Tenebrionidae, Colydiidae, Chrysomelidae, Elateridae, Scarabaeidae and Helodidae. The surprising fact to emerge from these rather dry statistics is the strong representation of the usually 'small' families Colydiidae and Helodidae.

Undoubtedly the beetles most frequently encountered in general sweeping and beating are weevils. There is a bewildering diversity of these of all shapes and sizes, ranging

from smaller than a pin-head up to 25 mm. in length. Some resemble cut sticks, others curled-up dead leaves, others pieces of bark, others bird-droppings, and yet others resemble various seeds and fruits. The Eugnominae, which occurs also in South America, includes the spiny weevils. These are bizarre insects, such as *Nyxetes bidens* Fab., which bears a long conical spine on each elytron, and *Scolopterus* spp., which have the shoulders produced into blunt spines, and bear two small spines posteriorly.

Besides weevils *sensu stricto*, New Zealand is well provided with members of the smaller families of the Curculionoidea. The Giraffe Beetle, *Lasiorrhynchus barbicornis* Fab., is the sole member of the Brenthidae in New Zealand. The male is a greatly elongated insect, and almost half of its length of up to 75 mm. is taken up by its head, which consists mainly of the attenuated rostrum. The female is not at all like the male, being less elongate, with a shorter, more slender, rostrum, which bears the antennae at its mid-length, instead of near the tip as in the male. It is thought that the female's rostrum is adapted for boring holes in the dead trees in which she lays her eggs. The peculiarities of the male may be of significance in courtship, but this certainly needs further investigation. The Giraffe Beetle was known to the Maoris as *tuwhaipapa*, and regarded by them as the god of a new-made canoe, perhaps because of its shape.

Several New Zealand members of the Anthribidae [=Platystomidae], of the genera *Proscoporrhinus*, *Exilis*, and *Arecopais*, are notable for their greatly elongated antennae, which in the males may be as much as four times the length of the body. *Arecopais spectabilis* Broun is almost always found in association with the Nikau Palm (*Rhopalostylis sapida* H.

Wendl. and Drude), being common in the bases of fallen leaves of the latter.

The longhorn beetles of New Zealand include certain large, striking species, some of which are common at particular times of the year. The largest is the Huhu (*Prionoplus reticularis* White). The larvae inhabit rotten conifer logs, and have adapted themselves well to introduced *Pinus* sp(p)., which forms large commercial forests. These larvae were eaten by the Maoris, and are actually quite a delicacy when fried in butter—I have tried them myself! The adults frequently fly into lighted rooms on warm, still, moonless summer nights, causing considerable concern to the occupants. Their bite can be painful, especially between the fingers.

A less popular longhorn than the Huhu is the Two-toothed Longhorn (*Ambeodontus tristis* Fab.) which once bored into dead trees, but now seems to prefer wooden houses. As most houses in New Zealand are wooden, it is a serious pest, and has been known to cause neglected buildings to collapse in a pile of rubble! The so-called 'Lemon-tree Borer' (*Oemona hirta* Fab.) bores into quite a number of living trees, both exotic and native, besides Lemons (*Citrus limonum* Risso). There are many other fine endemic species of Cerambycidae, but few of them are of any great importance economically.

Bronze beetles (*Eucolaspis* spp.) are the abundant Chrysomelids of the lowlands. The adults eat holes in the leaves of many plants, while the larvae are root-feeders. The colourful metallic species of *Luperus* are confined almost exclusively to the mountains, with a single non-metallic species, *L. vulgaris* Broun, common in the lowlands in spring. Compared with the numbers in continental areas, there are few members of the Chrysomelidae in New Zealand, and there are probably

not more than 100 actual species. Several subfamilies (Cassidinae, Sagraeinae, Hispinae, Donaciinae, etc.) are not represented at all.

The Heteromera of New Zealand include a number of genera whose family attribution is in doubt, e.g., *Techmessa*, *Lagrioida* and *Syrphetodes*. This situation is not unusual amongst New Zealand insects. It frequently happens that definitions of tribes, subfamilies or families have been based on a study of only the Holarctic fauna, so that the classification eventually has to be modified drastically to conform with reality when genera from other parts of the world are studied more thoroughly.

The genus *Techmessa* includes cantharid-like insects which may be common on forest growth in summer. *Lagrioida* spp., in shape like small *Lagria* spp., live amongst dune vegetation on sandy beaches. The genus *Syrphetodes*, always previously included in the Tenebrionidae, comprises a number of species, of highly cryptic form, which resemble pieces of bark or dead wood on which the species live. The beetles are covered with scales in patterns of various shades of brown, and bear numerous rather irregular tubercles. They are very difficult to see in their usual haunts, their similarity to irregular projections of bark on logs being remarkable. Some true Tenebrionids (*Mitua* spp., etc.) and Colydiids (*Enarsus* spp., *Recyntus* spp., etc.) live in similar habitats, and are similarly coloured and sculptured. Most New Zealand Colydiidae are cryptically coloured, and usually appear to be rare, although in some cases they can be found in fairly large numbers in association with the specific fungi on which they feed.

Apart from cryptic forms, the New Zealand Tenebrionids are mainly ground-dwelling species. *Cilibe* spp. are characteristic of the drier parts of the country. The adults are *Asida-*

like insects which are found under stones or mat-forming coastal plants, while the larvae are typical soil-inhabiting false wire-worms. In wet forests members of the Australian tribe Adeliini (*Pheloneis* spp., *Cerodolus* spp., etc.) are common under logs except in the far north. Species found in rotten wood include the ubiquitous *Uloma tenebrioides* White, and less frequently members of the genera *Artystona* and *Aphthora*. Two species of *Choerodes*, small almost spherical beetles with strong digging-legs, are found in large numbers under seaweed drift on beaches.

There are quite a number of Melandryidae [=Serropalpidae] mostly of apparently endemic genera, including some moderate-sized, colourful species. The Oedemeridae are mainly coastal in distribution, except for the species of *Selenopalpus*, which appear to be predominantly subalpine. There is nothing outstanding to note about the remaining Heteromera. The families Alleculidae, Salpingidae, Mordellidae, Rhipiphoridae, Anthicidae, Pedinidae, Scaptiidae and Aderidae are all present, but Meloidae are lacking.

The most remarkable New Zealand Clavicornia are the two species of *Brontopriscus* (Cucujidae). Both adults and larvae are greatly flattened insects which live under the loose bark of logs, a habitat for which their form is uniquely suited. Members of the Cryptophagidae and, less frequently, Lathridiidae, are beaten or swept from foliage, but they are mainly small, obscure species. The Coccinellidae are not well represented, and most of the native ladybirds are small and dull.

I shall discuss the remainder of the beetle fauna and other insect orders in subsequent parts of this series.

20.3.64.

J. C. Watt (3578).

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J.C.W.

JUNIOR NEWS SECTION

Isn't it annoying how summer always catches you out? Having just got used to winter with its rain and lack of insects you suddenly find yourself in summer with its rain and flood of insects. If only you had been prepared. Each year I promise myself a winter of intensive study in some new group of insects or other animals. I studied dragonflies one year, bumble bees the next. I even, dare I say it, worked on spiders, but each summer finds me nowhere near the end of my studies or preparations, and everything just passes me by before I can get round to it.

I do hope next summer won't catch us out again.

Many thanks to Peter Hugo (3522J) of 38 Cotswold Crescent, Chipping Norton, Oxfordshire, and Michael

Noble (3539J) of 19a Kidbrooke Park Road, Blackheath, London, for their news of swarms of Cockchafer beetles (*Melolontha melolontha* Linn.). I was beginning to think such stories were fairy tales. Peter's Cockchafers crowded the tops of local Sycamore trees (*Acer pseudoplatanus* Linn.), and filled his mercury-vapour light-trap. He says he could not leave the house without being hit in the face by one of these beetles.

Michael also noticed swarms of Cockchafers crowding trees on Blackheath. This time they were around Cherry (*Prunus* spp.) and Chestnut (*Castanea sativa* Linn.) trees. These beetles were as big a nuisance as those in Oxfordshire, and forced Michael to abandon his cricket as they came down like hornets.

These swarms were seen last summer. Did anyone else see similar swarms? Please let us know if Cockchafers appear in large numbers again this year.

J. Heath (3627J) of 26 Shepherd Road, Sheldon, Birmingham 26, sent me a very interesting beetle larva. It was certainly a longhorn grub and looked very much like that of the House Longhorn (*Hylotrupes bajulus* Linn.) but it was found in seasoned wavy-edged oak board, while *H. bajulus* is supposed to be a plague in softwood (coniferous) house timbers. Is it a 'rebellious' House Longhorn or a foreign visitor?

Brian Coles (3533J) of 25 Barnhill, Pinner, Middlesex, was lucky enough this spring to catch one of two Comma Butterflies (*Polygonia c-album* Linn.) which he saw for the first time near his home. He was actually looking for Small Whites (*Pieris rapae* Linn.) at the time and managed to take a mating pair. The female laid her eggs in Brian's cage even after being frightened by his dog. One of the Small White males taken had strange indentations on the back edges of the forewings. There were



smaller indentations on the back edges of both hindwings. These were so obviously balanced that they could not have been torn edges. Has anybody else seen one of these strange butterflies?

If any of you have any tips on how to pronounce scientific names, especially those of the butterfly families, you will be helping both Tony Gettins (3630J) of 79 Canberra Road, Leyland, Nr Preston, Lancashire, and me. Tony wrote to ask me about this problem and I wondered whether any of you could tell us how you remember to say the wretched words.

Don't forget to let Jonathan Cooter (3290J) of 174 Seaforth Gardens, Stoneleigh, Surrey, have your records—of numbers, place, date, etc.—for beetles of the genera *Cicindela* and *Elaphrus*. He is making distribution maps, although I think if he told us what the maps were for he would get more records.

R. H. Allen (3628J) of 26 Burnside Road, Dagenham, Essex, has just started keeping the stick insect *Carausius morosus* Br. He would be interested to hear about other people's experiences with these fascinating creatures. How many of you keep other species of stick or leaf insect?

I almost forgot to give the answers to the quiz in last May's issue of the *Bulletin*. Here they are:

- (1) Damselflies (Odonata) have four wings.
- (2) Orthoptera would include grass-

- hoppers, locusts, bush crickets, mole crickets and true crickets, but not cockroaches (Dictyoptera), earwigs (Dermaptera) or leaf or stick insects (Phasmida).
- (3) The three segments of an insect's thorax are the prothorax, mesothorax and metathorax.
 - (4) The forewings of Coleoptera (beetles) are modified into elytra or wing-cases.
 - (5) Scorpion flies (Mecoptera) are so called because the males have turned up tails tipped with a bulge like a scorpion's sting (although Mecoptera do not sting).
 - (6) The world's largest moth and beetle are the Atlas Moth (*Attacus atlas* Linn.) and the Goliath Beetle (*Goliathus regius* Klug).
 - (7) Isoptera are termites.
 - (8) British social wasps' nests are made of wood paper.
 - (9) The scientific name of the Honey Bee is *Apis mellifera* (= *mellifica*) Linn.
 - (10) Malpighian tubules act as 'kidneys'. They absorb waste materials from the insect's blood.
 - (11) House Flies (*Musca domestica* Linn.) used to breed most commonly in stables on horse manure before the motor car took the place of the horse for travel.
 - (12) There are nineteen species of bumble bees of the genus *Bombus* and six species of *Psithyrus* in Britain.
 - (13) The yellow cocoons of an ichneumon parasite are often found on the dead bodies of caterpillars of *Pieris brassicae* Linn.—usually those of the Braconid *Apanteles glomeratus* Linn.
 - (14) Robber flies are the 'bandits' of the fly world. They hunt

down smaller insects with great ferocity.

- (15) Tracheae channel air into the insect's body from the spiracles.
- (16) The ears of shorthorn grasshoppers are found (on the sides) at the front of the abdomen.
- (17) Ladybird beetles eat aphids (greenfly).
- (18) Parthenogenesis is a process of reproduction in which females lay eggs which develop without the necessity of a male.
- (19) Social insects live together in colonies and actually feed and take care of the young.
- (20) House Flies spend the winter as pupae.

I do hope Wesley Caswell (3133J) of 46 Lewgars Avenue, Kingsbury, London N.W.9, managed to arrange the expedition to Austria which he planned for this summer. We look forward to hearing about his exploits.

I know that Richard Claypole (3688J) of 196 Lawrence Street, Mill Hill, London N.W.7, was also planning to go hunting on the Continent this year. Do let us know what you caught, Richard.

I hope to see you all at the Annual Exhibition.

H. J. Berman (2941A).

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LETTERS TO THE EDITOR

Sir,—I have just read Mr John Moore's letter concerning the scarcity of the word 'bug-hunter' and his view concerning conservation generally (*Bull. amat. Ent. Soc.*, **23** : 32-3). I have been reading with interest previous articles on the subject in past *Bulletins* and thought you may permit me to have a little space to express a few points that seem to have arisen out of these articles.

I have looked through the *Bulletins*

for the past few months and notice that since the appearance of Vol. 21, No. 255, up to Vol. 23, No. 262, there has been a continual series of articles and comments upon conservation and allied topics. There is even a mention of the word 'bug-hunter' in Vol. 21, No. 253 !

However, there seem to be two points which disturb me. The first is that there is a tendency to argue and 'split hairs' over words and phrases. Secondly, there is a danger that such a concentrated 'write-up' of these problems over the last few months may have an effect which is not the one desired by the authors of the articles : that is that the readers become bored, and the attitude " Oh ! that stuff again " may very easily be formed.

Surely, what is most important is that the insects themselves, the very issue of the discussion, are not lost in the undergrowth of verbal outpourings. Since joining the Society about seven years ago I have come into contact with many amateur entomologists, bug-hunters, call them what you will. The common characteristic amongst all these people has been a genuine concern about conservation. Whilst I agree it is necessary to remind Members of the necessity for conservation the cause would, in my opinion, be far better served if space were used in the *Bulletin* to record actual achievements, and instances of damage caused by thoughtless behaviour, growth of urbanisation, insecticides, etc. I wonder how many Members who have seen such damage have bothered to inform our representative on the Nature Conservancy's Entomological Liaison Committee. I doubt if one Member in the whole of the AES Membership has bothered to do so. If I am wrong I would be delighted to be corrected by our representative Mr T. G. Howarth. How many cases of this nature have been recorded in

the *Bulletin*? So few in the past ten years that one could almost count them on the fingers of one hand. If our Members are really genuinely concerned with conservation I would have thought that this would be one of the obvious ways of actively doing something about it. The impression given at present is one of complete apathy.

I would like to end by quoting a sorrowful letter written to the Editor of the *Entomologist's Weekly Intelligencer* of Saturday, December 3rd, 1859.

" Sir,—In your 'Manual of British Butterflies and Moths', which I have lately procured, and which I would have given anything for when a young man, after your description of *Chrysophanus Dispar*, you allude to a letter from Mr Bond, stating " You are quite right in supposing that I have had personal acquaintance with the living *Dispar*," etc., etc. I infer from this that you have not had that pleasure yourself ; I therefore proceed to give you some account of my own acquaintance with that most beautiful insect, which, some thirty years ago, was so abundant in the unreclaimed fens about Whittlesea Mere that I never expected to hear of its utter extermination. Its brilliant appearance on the wing in the sunshine I shall never forget, and to watch it sitting on the flowers of the *Eupatorium cannabinum* and show the underside of its wings, was something ever to be remembered. I once took sixteen in about half an hour on one particular spot, where the above mentioned plant was very plentiful ; but unless the sun was very bright they were difficult to find. In those days the larva was unknown, and I attribute the disappearance of the butterfly to the discovery of the larvae, to the unceasing attacks of collectors, and to the burning of the surface growth of the fens, which is done in dry

weather when they are reclaimed.

Thirty years ago the fens about Whittlesea Mere were most interesting localities for the entomologist, the botanist, and the ornithologist. I lived then in that neighbourhood, and these pursuits were my delight. *Papilio machaon* might then be had to any amount; the flight of *Chrysophanus Dispar* was abundant in July; the moth *L. Dispar* was very plentiful; besides many other rare and beautiful insects. Now, however, everything is totally changed. The Great Northern Railway runs through a part of the fen where, when I was a boy, one could scarcely walk; at the spot where I used to land from my boat, on the edge of the mere, stands a farm-house; my favourite locality for *C. Dispar*—where the bog myrtle used to grow in profusion and scent the air with its delicious perfume—was (as I myself saw last season) converted into a field of stinking cole-seed, with a flock of sheep eating it off. All the better, no doubt for the landowners, but ruinous work for naturalists, and as such you will sympathize with me in the destruction of what was one of the most interesting localities in the whole country for persons inclined to such pursuits.—you will understand how indignant I felt when someone irreverently told me, a few years ago, that they had “tapped the mere”!

E. C. F. Jenkins.”

If Mr Jenkins had known that over a hundred years later his letter would be quoted I wonder what his reaction would have been. His letter seems to me to contain so much of what we are seeing and feeling today. If we are to save the necessity of writing that sort of letter in this century then we must be active, and not feel content to argue over words, and preach to the converted. We must report what we see to those associations which are fighting against the ever present drain and destruc-

tion of the flora and fauna of this country.

G. D. Trebilcock (2976).

REFERENCE

JENKINS, E. C. F. (1859). *Entomologist's Weekly Intelligencer*, 7: 79.

The Editor has always had plenty of space in the *Bulletin* to record specific outrages against our wild life, but no such records have yet reached him: hence a general ‘write-up’ of the problems involved might be considered the best way towards ensuring that Members take notice of activities which are likely to be harmful to wild life. At least those Members who are not already aware of it might then realise that conservation is a vital issue amongst naturalists at the present time—for certainly there is apathy towards (or even disregard for) wild life preservation. We must indeed report what we see to the bodies concerned with conservation before it is too late.—*Editor*.

Sir,—On 29th February 1964 I took a specimen of *Eupithecia centaureata* Schiff. (Lime-speck Pug Moth) at rest on a window-pane outside the East End Mission, Stepney, London E.1.

According to South (1961), “the moth, which is often common in gardens, is out from May to August, and specimens of a second brood occur in September and October”.

As this specimen was captured well out of its normal flight periods I am wondering whether it emerged under abnormal conditions, and would be grateful if any Member could give me any information on this.

14.3.64. M. O. Hughes (3612).

REFERENCE

SOUTH, R. (1961). *The Moths of the British Isles*. 4th edn. Frederick Warne, London. Series II, p. 215.

Sir,—I see from p. 34 of your February issue that an Alder Moth larva found in Devon is considered worthy

of record. You may therefore care to record also that on August 22nd 1963 I found a well grown larva of *Apatele alni* Linn. on a tree of *Cercidiphyllum japonicum* Sieb. and Zucc. (Katsura-tree) in the grounds of Dartington Hall, South Devon.

R. S. R. Fitter.

REVIEW

Report of the Nature Conservancy for the year ended 30th September 1963. Pp. vii and 164. Pl. 12. 1 map. Her Majesty's Stationery Office. Price 11/6d.

This Report describes the activities of the Nature Conservancy for the period under review and concludes with lists of scientific staff and staff changes; a list of Reserves with information on freedom of access, and names and addresses of Wardens, research grants; etc. There is no list of Sites of Special Scientific Interest and none is advertised as being among the publications of the Nature Conservancy. This is an unfortunate omission, because the average naturalist will not recognize when damage that he sees is occurring on such a site, which is often declared to be an 'SSSI' because it is highly vulnerable.

The chapter on Conservation, which describes the management being undertaken on Nature Reserves, will be found the most generally interesting. A preoccupation with mammals and game birds is seen here, because of the profound effect of grazing on the vegetation and because of the prime interest which land-owners have in these groups. Increasing efforts are being made to transform land use by soil treatment, especially by the application of fertilisers for establishing forest on barren

uplands. The effect on the wild vegetation of manipulating cover, and soil fertility, is obvious enough, but the effect on the invertebrate fauna appears to be little noted. Amateurs can do a great deal to help here by recording the dominant plants, variety of vegetation, and cover, when recording lists of captures. The severe effect of public use of Reserves for recreation is recounted in predictable manner. Particularly sickening are such reports as that of the need to remove Reserve signs at Newborough Warren every evening and replace them again in the morning to prevent their destruction.

The chapter describing scientific research at the various Research Stations is of very uneven presentation. Some of the reports are written for too specialized a readership and the reasons for undertaking some highly technical investigations are not made clear. Too much space is devoted in the reports of some of the Research Stations to projects which have no results to report. In some cases the space is filled by reference to what it is hoped to achieve next year. There are stated to be 144 scientifically qualified staff in the Conservancy, but as they have 105 Nature Reserves to look after with a minimal number of Wardens and assistants, it does not appear that this staff should feel bound to try to imitate the research done in Universities and large Government research establishments. The Report records a few secondments of staff from elsewhere to the Conservancy, and records that a growing volume of research is being carried out on Nature Reserves by universities. No doubt this trend will help the Conservancy's staff to find the best direction for their own efforts.

In view of the restrictions placed upon visitors, particularly amateur entomologists, on some Reserves, it is desirable that in the next Report

there shall be some indication of the existence of an official policy on this matter. The references to relationships with the County Naturalists' Trusts and similar bodies make no reference to the friction that is caused by the extreme views of a few of the Conservancy's officers.

Every naturalist should read through these Annual Reports and have to hand a reasonably recent volume for this information, particularly if he is likely to want to visit Reserves at short notice.

1.3.64. R. W. J. Uffen (1660).

LUCILIA BUFONIVORA MONIEZ

For experiments on the transmission of a protozoan parasite of the Common Toad (*Bufo bufo* Linn.) a laboratory culture of *Lucilia bufonivora* Moniez is required. Would anyone finding living specimens—larvae, pupae or adults—with which the culture could be started please send them to Dr E. U. Canning, Imperial College Field Station, Ashurst Lodge, Sunninghill, Ascot, Berkshire.

QUERIES

Have any readers had dealings with *Araschnia levana* Linn. (Map Wing Butterfly)?

I have had no luck in my attempts to pair this butterfly, but would like to know if anyone has achieved this seemingly impossible feat, as I am interested in breeding this species.

If anybody has advice on this problem would they please write to me at the address given in the *Membership List*.

R. F. McCormick (3375).

A Member has written to me asking for advice (through the *Bulletin*)

from other Members on how to induce female butterflies caught in the wild to lay eggs, as, despite attempts to implement all the methods of which he has read, he has had no success whatsoever in obtaining ova in this way.

Do any readers have 'tips' about this which they would care to pass on for the benefit of other Members?
—Editor.

NOTES AND OBSERVATIONS

MORE RECORDS OF THE ALDER MOTH

Since the publication of the latest edition of South's '*Moths*', several lepidopterists have pointed out misleading information which has been reproduced from the previous edition without any attempt having been made to alter the text in the light of more recent knowledge.

I would suggest that this must be the case with the information on *Apatele alni* Linn. (Alder Moth), a species which, prior to 1959 when I commenced using mercury-vapour light, seemed, in view of what South said about it, extremely unlikely ever to come my way. However, on the very first night I ran an 'm.v.' light, in the above-mentioned year at Sevenoaks, Kent, a perfect male example of this species 'plopped' on to the sheet. In all a total of seven specimens came to 'm.v.' at this locality in two seasons. Last year two more came to my 'm.v.', this time near Basingstoke, Hampshire. Also, a friend, Mr P. Rogers, informs me that an estimated twenty specimens arrived at his 'm.v.' during one evening in 1963 at Alice Holt Forest, Hampshire.

Until 1963 I had never seen the peculiar and striking larva, but on

August 9th, near Basingstoke, I took an almost fully fed larva from a leaf on a Crab Apple tree (*Malus sylvestris* Mill.), and another of similar size the next night on a willow (*Salix* sp.) at Alice Holt Forest.

I feel sure other more experienced Members must have encountered this species many times over the years. It would be interesting to hear just how rare they consider it to be.

20.3.64. E. A. Sadler (2966).

REFERENCE

SOUTH, R. (1961). *The Moths of the British Isles*. 4th edn. Frederick Warne, London. Series I and II.

THE DISTRIBUTION OF THE ARCHER'S DART AND ROSY MINOR MOTHS

According to South's '*Moths of the British Isles*' the Archer's Dart Moth (*Agrotis vestigialis* Hufn.) is a coastal species. During August 1962 I found it abundant in my bedroom, and to street lamps, but in 1963 although I searched and used a moth-trap (for the first time) I was unable to take a single specimen (in Cheshire). Can anyone offer a reasonable explanation for this?

As with the above-mentioned species, the Rosy Minor Moth (*Procyta literosa* Haw.) is, according to South, essentially a coastal species, being rare inland, but every year I have found it common on Privet (*Ligustrum vulgare* Linn.) at dusk.

24.2.64. S. H. Church (3626J).

REFERENCE

SOUTH, R. (1961). *The Moths of the British Isles*. 4th edn. Frederick Warne, London. Series 1, pp. 131 and 289.

THE DOT MOTH

The Dot Moth (*Melanchra persicariae* Linn.) is not supposed to be common North of the Midlands but I have found it abundant each year and have found larvae as late as mid-November (last year). In some speci-

mens the 'dot' is much larger than usual, and I would welcome any explanations for this from Members. 8.2.64. S. H. Church (3626J).

FURTHER RECORDS OF THE LEAST CARPET MOTH IN SOUTH-WEST LONDON

Two more specimens of *Sterrha vulpinaria* H-Sch.—previously *S. rusticata* Schiff.—(Least Carpet or Least Carpeted Wave Moth) have been taken in my mercury-vapour light-trap here in Streatham.

One, well worn, was taken on 16th June 1963. The other, slightly worn, was taken on 19th June 1963.

These captures, along with the one taken in 1961 (see *Bull. amat. Ent. Soc.*, 21 : 12), and the reply to that record given in *Bull. amat. Ent. Soc.*, 21 : 84, lead me to believe that this species is breeding in this area.

R. F. McCormick (3375).

THE BORDERED SALLOW IN SOUTH-WEST LONDON

On 23rd July 1962 I took in my mercury-vapour light-trap a mint specimen of *Pyrrhia umbra* Hufn. (Bordered Sallow Moth).

Have any other Members taken this species in the London area?

R. F. McCormick (3375).

THE LIGHT ORANGE UNDERWING MOTH

I would like to record that a male Light Orange Underwing Moth (*Arch-earis notha* Huebn.) was taken in mixed shrub near Wickam, Hampshire, on 8th April 1964.

It was immediately recognisable by its strongly bipectinate antennae and unicolorous forewings.

12.3.64. Richard J. Dickson (3674J).

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ANNUAL EXHIBITION, 1964

SATURDAY, 24th OCTOBER

(Subject to confirmation) from 2.0 p.m. to 5.30 p.m.

HUGH MYDDELTON SECONDARY SCHOOL,
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ADMISSION FREE

EXHIBITS. The Hall will be open from 11.30 a.m. for receipt of Members' exhibits. Bring along your specimens (any Order, living or set), equipment, apparatus, photographs, drawings, etc. If you require a large space, notify the Meetings Secretary in advance. Please label exhibits clearly.

DEMONSTRATIONS. Members will demonstrate setting of insects of several Orders.

GROUPS. Members of Groups who have been corresponding will be able to meet for discussion.

SURPLUS TABLE. If Members have spare ova, larvae, imagines, equipment, books, etc. for sale or exchange, bring them along labelled with name, price or exchange wants. No charge for use of this table.

ENTOMOLOGICAL TRADERS will be in attendance.

Light Refreshments will be available

Offers of help and enquiries to Hon. Meetings Secretary:
B. F. Skinner, 85 Elder Road, West Norwood, S.E.27. GIPsy Hill 0057.

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VOL. 23

No. 265

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NOVEMBER, 1964



PRESENTED

17 FEB 1965



THE BULLETIN OF THE AMATEUR ENTOMOLOGISTS' SOCIETY

World List abbreviation : Bull. amat. Ent. Soc.

EDITED by H. V. DANKS

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Manuscripts, drawings, and books for review to: H. V. Danks, 7 The Ridge, Surbiton, Surrey. ELMbridge 4156.

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Youth matters to: H. Berman, St Ivo School, St Ives, Hunts.

THE LONDON NATURAL HISTORY SOCIETY

This Society has sections covering all aspects of natural history and in particular, entomology. Lectures and field meetings are arranged and research work carried out. Papers on entomological subjects are prepared by members and published in the Society's journal "The London Naturalist". The Society has a library housed at Ealing Public Library.

Further details may be obtained from:

The General Secretary, Mrs L. M. P. SMALL,
13 Woodfield Crescent, Ealing, W.5.



EDITORIAL

A few articles are still being sent to the previous Editor at his old address: this means that these items do not reach me until a considerable period after they have been written, and I apologise to any Member whose article has been delayed in this way. It is essential to use the most recent issue of the *Bulletin* when consulting the 'where to write' panel inside the front cover.

The second supplement to the current *Membership List* is to be found as extra centre pages in this issue.

H. V. Danks (2907).

ADDITIONS TO AES ADVISORY PANEL

Phasmida (Leaf- and Stick-insects)

General advice and identification

M. H. ROBINSON, Dept. of Zoology, University Museum, Parks Road, Oxford.

Araneida (Spiders)

General advice and identification

D. J. CLARK, Zoology Department, British Museum (Natural History), Cromwell Road, S.W.7

PUBLICATIONS ORDER FORM

Members are reminded that when ordering AES publications using the recently revised List and Order Form, their names and addresses should

be included: the absence of a space on the List for these essentials has led several members to order publications from the Society's Publications Agent without enclosing an address to which publications and invoice are to be sent.

COLLECTING NOTES — November, 1964

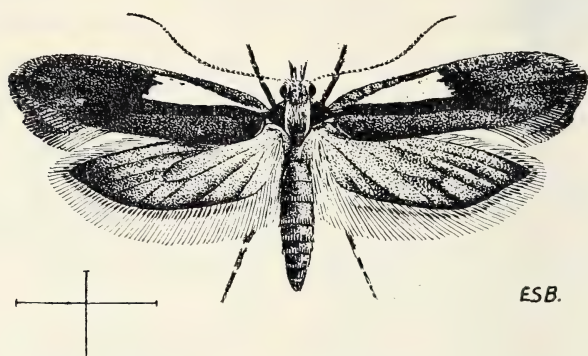
The Smaller Moths

Ypsolophus costellus Fab. (= *parenthesellus* Linn.). Mr. Bradford's notes read: — "Fairly common. The forewings are variable, some being a rich reddish brown and others a paler hue. The white streak or blotch is also strong in some and obscure in others. The hindwings are grey darkening towards the termen. It is on the wing from August to September.

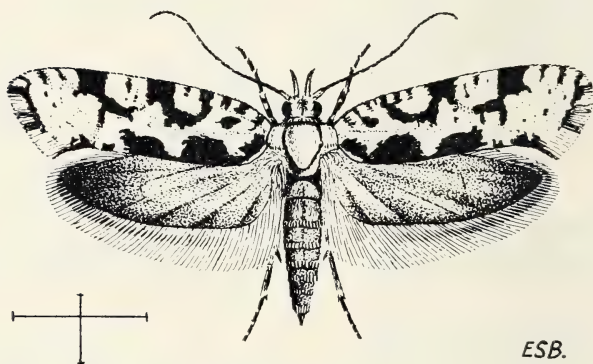
"I have taken cocoons of this moth from crevices in the bark of oak (*Quercus* spp.) early in the year when they have been quite noticeable against the darker background. The larva makes a pale ochreous cocoon, boat-shaped almost the same as *Y. alpellus* Schiff. It feeds on oak, Hornbeam (*Carpinus betulus* Linn.), and most likely other trees."

Y. sequellus Clerck. Mr Bradford's notes read:—"The drawing is from a specimen taken locally among Sycamores (*Acer pseudoplatanus* Linn.); its foodplant, or I should say one of its foodplants. Its preference is Maple (*A. campestre* Linn.) and it may feed on other trees.

"The head, thorax and forewings are white with black markings. There is a hint of ochreous colour on the head and towards the base of



ESB.

Ypsolophus costellus Fab.

ESB.

Ypsolophus sequellus Clerck

the wings. Hindwings are greyish, paler towards base. The moth is on the wing in August and September, (stated by Ford to rest high up on trees and if disturbed to settle low down). I have found it low down, about a foot from the ground."

I have taken this moth on a fence and also on trees at about eye level — although I suppose that depends on how tall you are! Well, I am average height.

I think that during these last few years I have said about as much as there is to say in general terms about collecting at this time of year. If you haven't got the

relevant *Bulletins*, then treat yourselves and buy some from our Publications Agent. If you can't afford to then write to me personally. Don't forget that I shall always be pleased to receive any assistance in writing these notes. If I get this perhaps I shan't upset the *Bulletin* Editor so much by sending in my material late! The next notes will be in 1965, so I wish everyone a Happy Christmas and a successful New Year.

D. Ollevant (1514).

REFERENCE

FORD, L. T. (1949). *A Guide to the Smaller British Lepidoptera*. South London Ent. and Nat. Hist. Soc., London.

The Hymenoptera Aculeata

Many are first attracted to the Hymenoptera through the bumble bees, which certainly form both a conspicuous and an important part of the bee fauna. Fortunately for the beginner the British species are now well-covered in the literature. In particular the recent book in the New Naturalist series, 'Bumble Bees' by Free and Butler, includes a wealth of information, and the appendix by Dr I. H. H. Yarrow includes the simplest and most up-to-date key to our more usual colour forms. For those who wish to pursue the matter further, the classic book of F. W. L. Sladen, 'The Humble bee, its life history and how to domesticate it', contains much acute observation, and the work of Professor O. W. Richards (1927) gives a full, fundamental account of the specific characters of the British species. The illustrations of the male genitalia of most species is a particularly useful feature of this latter work. Nor does this wealth of literature mean that nothing remains to be discovered about the group, as in fact they present opportunities for many types of study of which I want to consider two here.

The species of *Bombus* and *Psithyrus* make a handsome collection. Killing is perhaps best accomplished with a cyanide bottle. Ethyl acetate can of course be used, but extreme care must be taken to ensure that the coat of the bee does not become wetted. Bumble bees can be set in a similar fashion to the Lepidoptera, or can be mounted on longer pins with the wings in the normal resting position. The latter is preferable for scientific study, and can present a very pleasing appearance as a sight of the Pittioni collection now in the British Museum (Natural History) will show. The presence of the worker caste in the genus *Bombus*

adds to the variety of the collection. In some species the workers can vary considerably in size. In *B. lapidarius* Linn. workers of the first broods are smaller than those of later broods, whilst in *B. agrorum* Fab. occasional very small workers, and sometimes also very small males, are taken. This latter species is a surface nester, and the small individuals develop from larvae that in the nest were farthest from the food store.

The preparation of a representative collection can still help in elucidating certain points. Most obvious is the case of *B. muscorum* Linn. and *B. smithianus* White. The fringing distribution of the latter in the north-west has always presented the possibility that the two forms are subspecies. Collections made where both forms occur are giving the answer which currently seems to favour the specific distinction. Such collections are of the queens emerging in the spring, and require appreciable time in the field. Autumn collecting presents opportunities for getting to know species. Though the new generation of queens quickly go into hibernation, the larger late-season workers are busy and the numerous males are easy (and safe!) to catch, and easy to identify.

One problem pertaining to autumn collecting deserves more attention than it has apparently received. Migration in butterflies has been often observed and is well authenticated. Often other insects are observed moving with the butterflies, and occasionally records of bumble bees have appeared. Most recently Mr E. G. Philp (1957) reported a movement of bumble bees alone. These movements are certainly real but what can be their function? Are they dispersal flights merely channelled where a physical barrier is met? Mr Philp observed bees moving north along the coast against a N.E. wind. This August at Great-

stone I observed a similar movement of bees moving south against a S.W. wind. Over what distances do the flights occur? Could there be any return movement in spring? Some of these questions could be answered by more planned observation perhaps coupled with marking, and the suggestion is commended to any who find a locality near their homes where such movements occur.

So much for bumble bees; perhaps a closing mention of the social wasps would not be amiss. Last autumn the abundance of *Vespula* spp. prompted my autumn article (*Bull. amat. Ent. Soc.*, 22: 107-9), and I suggested some survey methods for assessing the relative abundance of the common species. This year populations of wasps have been low, following the wet May. At present I have insufficient data to show whether *V. vulgaris* Linn. makes up a greater percentage of the population than last year at the expense of *V. germanica* Fab., as I postulated might happen under these conditions. However, I hope to gather the relevant information over the next few weeks, and hope that others will do likewise in their own localities. As a tail-piece I might mention that the only wasp to appear in the light-trap so far is again *V. vulgaris*. Can this be significant?

J. C. Felton.

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 SLADEN, F. W. L. (1912). *The Humble Bee, its life history and how to domesticate it*. Macmillan, London.
 [For those who find access to Professor Richard's paper difficult, it could be added that the AES Leaflet on Bumble Bees (no. 25, 1953), by T. B. Poole, contains drawings of the male genitalia of most of the British species, as well as keys, descriptions and illustrations for the genera *Bombus* and *Psithyrus* — Editor.]

there was a rather depressing reference to the reduced facilities for collecting and observing wild life in Britain: the writer went on to contrast the gloomy prospects here with the greatly superior opportunities abroad. While accepting that there is something to be said for this argument, I could not help feeling that if more Members would turn their attention to groups of insects other than the butterflies they would find endless possibilities for exciting and worthwhile activity without even going to the remote parts of Britain, much less crossing the Channel.

Again, we have been — quite rightly — reminded from time to time in these pages of the dangers of over-collecting, and those of us who have any conscience may sometimes feel a bit guilty when we look at long series of some of the rarer Lepidoptera. But there are many Orders of insects where it would be absurd to criticise the formation of representative series, and while I should certainly not wish to advocate collecting as an end in itself, most amateur entomologists enjoy the pursuit and collection of insects, and it is often essential to have named specimens in order to be able to know what insect one is observing and therefore to increase one's knowledge of the group.

Insects are virtually ubiquitous — but Lepidoptera are amongst the least ubiquitous! Specimens of many other Orders can be found much more easily: to take only the big Orders, there can be little doubt that Hemiptera, Coleoptera, Hymenoptera and Diptera are all much more in evidence, say in the course of an average country walk, than are butterflies and moths. Do we realise that Lepidoptera comprise only about ten per cent of the species of insects native to Britain? In individual specimens the proportion must

CONSIDER THE FLIES

In a recent issue of the *Bulletin*

be very much smaller. Yet only about a third of AES Members (according to the most recent *Membership List*) take an interest in any part of this predominant ninety per cent. Oddly enough — or perhaps it is not so odd — almost precisely the same position obtains in the membership of another well-known entomological society of which I am a member.

Now if we are amateur entomologists because we are interested in insects and want to find out more about them, surely there would be great advantages in spending our available time on a group where (a) the field is less 'crowded', so to speak, with other students, and (b) there is an abundance of living material at hand.

In this and a future series of articles I want to talk about the flies (Diptera) and in particular the crane-flies (Tipulidae) and allied groups as a fascinating and inexhaustible world to investigate, both at home and in the field. The Diptera fulfil both the criteria I have just mentioned: moreover they can be found in the adult stage at all times of the year. Not only are there enormous gaps in our knowledge of their life-histories, distribution and habits, but new species are still being discovered. I can think of at least four very large flies, two of them crane-flies, that have been found for the first time in England during the last twenty years.

One of the difficulties in beginning the study of flies has been the absence of books with which to identify one's captures. Since the war, however, things have greatly improved. We now have a first-rate and very readable general account of the Order — Colyer and Hammond's *'Flies of the British Isles'* — and keys to several of the more prominent families of flies are also readily available. It must be accepted,

of course, that it is virtually impossible to collect and name the whole Order (over 5000 British species). But, when we come to think of it, how many of us attempt to collect and name all the 2000-odd British Lepidoptera? Let us recognise that there is nothing sacrosanct about an Order of insects as such, nor is there any special virtue or satisfaction to be gained by trying to bite off more than we can chew. One family of flies — or indeed of any animals — may well provide us with enough scope to occupy our leisure for many years.

Then you may say "But flies are so small, so dingy and so unattractive". Very well — I will admit that a drawer full of flies will not appear so beautiful to the layman as a drawer of butterflies. But surely as entomologists we soon get beyond the stage when the main object of our hobby is to fill our boxes or drawers with dead creatures, however cleverly set and arranged? Even so, it seems to me that a great many, say, hover-flies are the equals in beauty of form of most of our Lepidoptera: normally, of course, it is the bodies of flies, not their wings, that are the more colourful parts.

Many flies are certainly very small, and cannot be properly identified without a microscope. But I am suggesting that you should begin to explore this new field by collecting and studying one of the groups of large flies. Crane-flies, mosquitoes and hover-flies are three such groups for which good keys are available. In all three, you will have no difficulty in finding plenty of specimens, wherever you live. You are not likely to find adult hover-flies during the winter, but flies of the first two groups can be seen at most times of year.

There is an excellent guide to methods of collecting and studying flies available to AES Members, Mr

L. Parmenter's leaflet (No. 5) *Collecting Flies*, and I would strongly recommend any new dipterist to get a copy of this: it is a real mine of information. But in my next article I propose to deal specifically with the families of crane-flies and their allies, and to tell you of some of the difficulties I experienced when I began to collect them several years ago, and how I have dealt with these difficulties.

20.7.64.

R. M. Payne (2982).

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HAND-PAIRING OF LEPIDOPTERA

One of the difficulties of breeding butterflies in captivity is the obtaining of pairings under artificial conditions. It is among the active and strong-flying species that most difficulty occurs. Artificial pairing by hand has been successfully used by many breeders, in particular by the Japanese, and for the amateur it is an interesting field for research. I myself have tried several species but have only been successful with the two *Papilio* spp. *P. machaon* Linn. and *P. sinon* Poda, and the Large White (*Pieris brassicae* Linn.); all of which have the males with large well-developed claspers.

I expect that there are published papers on this subject but it might be helpful for interested Members if I briefly outline the method I use. A small muslin-covered cage is used and this should have in it potted foodplant and a jar containing nectar-secreting flowers. The physiological state of the butterflies to be mated is important and it is preferable that the male should have emerged a few days prior to the female. I hand-feed

the male each morning with honey water, pulling out the proboscis with a setting needle, before returning him to the cage so that he can feed further on the flowers if he desires. The female should also be fed a day after emergence and introduced into the cage with the male and kept in a sunny spot. It may be that natural pairing will occur but if not, I feed both partners again the next day and then hand-pair them. I believe that with the Nymphalidae it would be necessary to wait much longer than this as it appears that natural pairings do not occur until a week or more has elapsed after emergence. The method of hand-pairing is fairly simple once one has the knack. I take the female firmly by the wings (closed above her back) in my left hand and the male similarly in my right hand. With the middle finger I push gently upwards on the body of the female, who may or may not extrude her genitalia. I then do likewise with the male so that he opens his claspers and extrudes the aedeagus. The open claspers are then placed over the end of the female's abdomen and what should then happen, and usually does happen if the butterflies are ready to pair, is that the male grips the female and copulation ensues. If this does not happen, continue the method for a short period and if unsuccessful return the butterflies to the cage. Another try should be made next day after feeding. When copulation has occurred, let go of the male, who will hang in the normal position after copulation, and place the female on to the flowers in the cage so that she has a good footing and so that the male may hang freely. Now shade them so that they will remain quiescent. After they have separated it is necessary to continue to feed the female regularly until she has deposited all her ova.

It would be interesting to hear of other Members' attempts in this field, and of the species with which success has been obtained.

25.7.64. P. W. Cribb (2270).

THE ORANGE TIP BUTTERFLY

On 31st May this year, I went off to the Chilterns to obtain some eggs of the Orange Tip Butterfly (*Anthocharis* (= *Euchloe*) *cardamines* Linn.). The weather was not good, so no other collecting was possible, although an eye was kept open for anything. Near King's Langley I found a lane bordered on one side by plenty of Hedge Garlic (*Alliaria petiolata* (Bieb.) Cavara and Grande). After a few minutes search, I was able to spot eggs from a few yards distance. Usually I found the orange eggs on the remaining flowers, just above the forming seed-pods. A few young larvae were also found.

The eggs began to hatch, one or two a day, as soon as I brought them home. Before hatching they turn greyish with a touch of orange. The young larvae were light orange, not the colour of the seed-pods at all, the latter being a medium green. The larvae would eat the seed-pods if these were offered, but if the larvae were placed on a leaf this would be eaten.

The appearance of the larvae is as follows:

first instar — light orange, one eighth of an inch long.

second instar — medium green, hairs every so often with blobs of transparent liquid at the end of each hair.

third instar onwards — blobs lost, larvae apple green with a white bloom.

No cages were used, except for a few large larvae and for those

nearing pupation. When small, four or five disappeared, but whether this was due to cannibalism I do not know. I never found any remains, but the larvae were very small. When large the caterpillars moved about more, resulting in three of them being within a quarter of an inch of each other, but no signs of aggravation were apparent, and they were all there an hour later when I removed them — just in case.

The larvae did not all develop at the same rate, so I removed the larger ones to boxes, in case of cannibalism. Later, after changing the food (which I did only once), I endeavoured to replace them. This resulted in the loss of one, as they wandered. They also wandered when about to pupate. To stop them being lost as they neared pupation, I placed them in pill-boxes, with some food. One larva pupated when rather small, on the Hedge Garlic stems. This last larva used a girdle for support though the others did not.

When newly formed the pupa is the colour of the caterpillar. It does not wriggle, and goes more orange in a week or two. A week before the end of June all my remaining larvae pupated.

I hope for 100 per cent emergences next May. I will try to get some pairings, using the method mentioned in the *Countryman* (summer 1964, vol. 62, no. 2, pp. 341-5). This primarily refers to the Map Butterfly (*Araschnia levana* Linn.), and has some fine photographs, but the method of pairing given mentions *A. cardamines*.

The Orange Tip is well worth rearing as it is a pretty butterfly, often worn when taken on the wing as it is so frail. The larvae, and especially the pupae, are rather 'different', while the species presents little difficulty.

The method of no cages is excellent, provided that the larvae are

watched around pupation time. Air circulates around the larvae, frass falls well out of the way, and no sweating can occur.

7.7.64. Brian Coles (3533J).

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SOME PERSONAL OBSERVATIONS ON THE BREEDING OF THE PURPLE EMPEROR BUTTERFLY

During the later part of the summer of 1963 I visited some Surrey woodland with Mr Ron Jarman and a friend in order to observe the Purple Emperor Butterfly (*Apatura iris* Linn.) and to look for newly deposited ova. Unfortunately the day was, as was much of last summer, a stormy one, and we enjoyed only a brief period of sunshine. During this period we were able to watch a female Purple Emperor circle some tall Sallows (*Salix caprea* Linn.) and cross the ride just in front of us. She fluttered in amongst the Sallows and eventually settled and deposited an egg. We were able to find this, and afterwards discovered several others. They were laid on the upper surface of the leaves but in no particular position, being at the tip, along the midrib, and on the lamina or its edge. The egg is green when laid and turns purplish when approaching hatching. The ova were in all stages, indicating a fairly long period over which the females lay.

The larva hatches and immediately devours the egg-shell. This seems to be necessary to the well-being of the larva, as some bred in previous years were placed on fresh leaves as soon as they hatched, without the chance of eating the egg-shell, and these would not eat the leaves and eventually shrivelled and died. Having removed all trace of the shell the larva moves to the tip of the leaf

and lies there, head towards the tree, along the midrib. The larva is green with a large black head and has no horns. In wet weather and on dewy mornings it lies almost immersed in water for long periods, with only its head breaking the surface of the water. How it breathes I find to be a puzzle. The caterpillar is not hirsute and similar larvae would quickly drown in similar circumstances. I am led to wonder whether the large black head has any spiracles or any arrangement for absorbing air, and whether the 'horns' which appear at the first moult serve some similar function as I observed that only the tips of the horns protrude from the water when the caterpillar is small. The ova themselves are also more often in water than out of it, but the grooved markings on the egg's surface could well retain sufficient air to maintain the embryo. Whatever may be the answer (and a close look at the head of the larva might give the answer), it is certain that the wet has no terrors for the young '*iris*'. The young larva starts to eat small inroads into the edges of the leaf near to the tip, first on one side and then on the other. It will then move to another leaf, taking up the same position, and commence eating again. Eating is very sporadic, occurring usually in the early morning or evening. At the first moult the two horns appear and the larva takes on the appearance of the adult larva. It devours its cast skin completely (except for the tips of the horns in subsequent moults). A further moult takes place and then, as the days begin to shorten, the larva begins to reduce its feeding, which at no time has been voracious, and takes up a rigid position on a leaf tip, having first secured the petiole of the leaf to the stem with silk to prevent the leaf's fall. A change now begins to occur in the larva,

and the green fades and its place is taken by brown. The leaves are now also turning brown and thus the camouflage is maintained. The autumn has come and the leaves begin to fall: that bearing the larva may be only hanging by its silken thread, and the time has come for the larva to move on to the branch or twig supporting its leaf. Another colour change is now occurring and the brown has given way to an ashy grey which will harmonise with the greyish stems of the Sallow. The larva crawls along the stem and down the branch until it comes to a suitable crotch. Here it takes up a characteristic position, lying over the crotch with its horns depressed on one side and its tail on the other. Occasionally it may lie flat against the stem below a crotch or node, simulating a dormant bud, but in my experience the majority choose the crotch position. Once in position the larva makes no apparent movement throughout the long winter nights and short days, whether a gale blows or the branches are white with frost or covered with ice. The larva seems to be immune to all the vagaries of the weather. The dangers to the larva at this stage are other insects and birds. If one watches titmice in the winter months searching over the branches and twigs of the woodland trees, one appreciates how vulnerable is the larva of *A. iris* in its exposed position. This factor may be the most important one in the control of the numbers of imagines produced, and in causing the scarcity of the butterfly. The winter of 1962-63 was the most severe for a hundred years and all woodland bird populations suffered heavy losses, but the summer of 1963 was a good one for seeing the Purple Emperor Butterfly on the wing.

As the days begin to lengthen a change again occurs in the larva's colour, and it gradually regains its

pale green colour of the previous summer. This is done without a moulting of the skin. The buds on the Sallows are also showing their green and, as they start to break, the larva moves from its winter seat to which it will not return. Feeding on the opening leaves it rests near them on the stem, appearing like a young bud, until the leaves are open. It then moves on to the leaves, taking up its position on the upper-side of a leaf in a similar way to that of the year before. The larva makes a small silk pad on its resting-leaf and makes short forays from there to feed on other leaves on the same or adjacent sprays. Feeding is still sporadic, and a third moult occurs. A further moult occurs at the beginning of May and the larva finally moves to the underside of a leaf where it prepares to pupate. This usually takes place at about the end of May. The pupa is a pale green but darkens rapidly about twenty-four hours before emergence. In my experience, emergence occurs very late in the day and the butterfly hangs through the night drying its wings ready to take to flight on the morrow. Emergence may be from 18th June onwards depending on the particular season but the butterflies are still on the wing into August.

The breeding arrangements for the larvae of *A. iris* referred to above were fairly simple. A young Sallow bush was placed into a large pot which gave it ample root space, and the pot was filled with a mixture of clayey loam, peat and sand. A cage was then constructed high enough and large enough to envelop the potted plant and leave space all round it (this is important as it prevents larvae straying on to the cage). The cage was constructed from a strong wooden platform to which were secured uprights (2" x 1" batten) at the four corners. These were then secured to an

open frame at their top ends, and intermediate horizontal strengtheners were also fitted between the uprights on each side. Butter-muslin was then secured around the whole framework except for one side which was covered with 'Polyglaze' for viewing purposes. The top frame was covered with butter-muslin so fixed that it could be removed quite easily when necessary. The pot was lowered inside after the plant had been carefully examined for any predators (spiders, etc.). The leaves bearing the eggs were pinned to the leaves of the foodplant and the top was sealed. Watering was effected by pouring water through the muslin of the top of the cage. The 'glazed' side was placed facing north to prevent direct sunlight falling on it. It is most essential that all seams and cracks should be rendered insect-proof, as despite my precautions I found that earwigs were able to work their way in past the fixings of the butter-muslin, and they will quickly eat all the eggs if they are allowed to remain.

P. W. Cribb (2270).

THE PEACOCK BUTTERFLY IN GUERNSEY

In last February's edition of the *Bulletin* (*Bull. amat. Ent. Soc.*, 23: 17), Mr G. D. Trebilcock (2976) recorded a great increase in the Peacock Butterfly (*Nymphalis io* Linn.) in North Cornwall, with a decrease in the numbers of other butterflies.

The same thing has happened in Guernsey recently, though to a lesser extent. A few years ago, only one or two specimens of *N. io* were seen each year, but now the species is the commonest of the Nymphalids.

Table 1 gives the numbers of Peacock Butterflies seen in Guernsey showing the sudden increase in numbers between 1959 and 1962.

year	number seen
1957	1
1958	1
1959	4
1960	6
1961	11
1962	too common to be recorded

Table 1. Number of Peacock butterflies recorded in Guernsey.

Nobody seems to know the reason for this rise in numbers. If anybody has any theories I would be glad to hear of them.

22.4.64.

C. David (3504).

REFERENCE

La Société Guernsaise Report and Transactions, 1957-1962

THE MEADOW BROWN BUTTERFLY: SUBSPECIES *SPLENDIDA* B. WHITE IN SCOTLAND

It is stunning to think how little we really know about some of the more familiar insects which enhance our open fields and countryside. Even less is known about the fauna of Scotland and much of that country is virtually unexplored entomologically. Most collectors who come up to Scotland do not bother with common species like *Maniola jurtina* Linn. (Meadow Brown Butterfly), for they have a target such as *Erebia epiphron* Knoch (Mountain Ringlet), *E. aethiops* Esp. (Scotch Argus), *Coenonympha tullia* Muell. (Large Heath) etc., yet *M. jurtina* provides us with a most interesting situation, and one in which a number of people acting together could add a great deal to our knowledge of this common insect.

The problem concerns the range of *Maniola jurtina* subspecies *splendida* B. White. E. B. Ford (1945) states

that *M. j. splendida* has a distribution which is rather difficult to interpret. It is found only in Scotland from Dumbarton to Western Sutherland, and in some of the Scottish islands—in Baleshare, South Uist and Vatersay, and also in Barra. Mr A. L. Goodson of the British Museum (Natural History) at Tring informs me that he has specimens from Longa Island, Gairloch, Ross, Rhum, Shetland (?) and Uist. Here in south-west Perthshire *M. jurtina* ranges from the typical ssp. *jurtina* Linn. to an intermediate form between *jurtina* and *splendida* (cline).

For those who are not familiar with subspecies *splendida* the following points should help to distinguish it from the typical subspecies. *M. j. splendida* is a much more magnificent insect than the ordinary *M. j. jurtina*, being larger and brighter. The extent of orange on the upperside is greater than in ssp. *jurtina* and in the female may invade the hindwings and invariably invades the central area of the forewings. The most definite difference lies in the underside which is rather mottled and darker, the yellow of the normal form being replaced by a greyish tone with little or no contrasting band, especially in the male. A series looks quite different from one of the normal form.

When this article reaches the press the collecting season in this country will be over. Many lepidopterists will have ventured north of the Border to the rather less rewarding haunts of Scotland—perhaps neglecting the common *M. jurtina*, and in doing so passing over the more interesting ssp. *splendida*. If, however, you were in Scotland and bothered to take a few specimens of *M. jurtina* perhaps you could help towards filling a gap in our knowledge.

I am in the process of forming a map to outline the range and dis-

tribution of *M. jurtina jurtina* and *M. j. splendida* and any intermediate form throughout Scotland. Any information about this butterfly in Scotland would be welcome, but a more valuable contribution of a male and/or a female from any part of Scotland would help greatly towards forming the distribution maps. Specimens should be sent papered and marked with full data (including, where possible, latitude, longitude and elevation). When requested they will be returned or specimens of the cline *splendida/jurtina* from south-west Perthshire could be supplied in exchange if so desired. The result of my survey will be published in a later edition of the *Bulletin*. 6.6.64. George Thomson (3689).

REFERENCE

FORD, E. B. (1945). *Butterflies*. New Naturalist Series. Collins, London.

[Mr Thomson's address is 98 George Street, Dunblane, Perthshire.—Ed.]

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THE LEPIDOPTERA OF THE MAIDSTONE DISTRICT, 1963

The Lepidoptera of the area around Sutton Valence seems to me to be very rich in quantity. In the spring of 1963 the Orange Tip (*Anthocaris cardamines* Linn.) was common along most roads where there is a generous sprinkling of Garlic Mustard (*Alliaria petiolata* (Bieb.) Cavara and Grande), while the Small White (*Pieris rapae* Linn.), the Green-veined White (*Pieris napi* Linn.), and the Large White (*Pieris brassicae* Linn.) were very abundant. There were not many Brimstones (*Gonepteryx rhamni* Linn.) in the spring, however, although I did manage to catch one.

Last summer (1962) there were many Painted Ladies (*Vanessa cardui* Linn.) in the gardens but I have not seen any this year. Red Admirals

(*Vanessa atalanta* Linn.), Small Tortoiseshells (*Aglais urticae* Linn.) and Peacocks (*Nymphalis io* Linn.) were all very common, especially the latter, the caterpillars of which were plentiful on most of the large patches of Stinging Nettles (*Urtica dioica* Linn.).

The Small Copper (*Lycaena phlaeas* Linn.), the Meadow Brown (*Maniola jurtina* Linn.), the Small Heath (*Coenonympha pamphilus* Linn.), the Common Blue (*Polyommatus icarus* Rott.) and the Small Skipper (*Thymelicus sylvestris* Poda) were also common in the sheltered corners of fields with long grass.

This summer I found an ideal collecting ground for insects. It was a very small sheltered field enclosed on three sides by high hedges and by a stream on the fourth. Beneath the long grass and between the numerous clumps of bramble (*Rubus* sp.) and hawthorn (*Crataegus* sp.) the ground was covered with ant-hills, some being a foot in height, and it was obvious that this was useless land for cultivation. However, this place abounded in insect life. It seemed that nature had been allowed to take its own course until I came along. I have never seen so many Six-spot Burnet Moths (*Zygaena filipendulae* Linn.). They were everywhere, flying about like clockwork toys from one place to another. In five minutes I found about eight mating pairs clinging motionless on the grass stems. There were also a large number of Ringlets (*Aphantopus hyperanthus* Linn.) feebly flying between the shady thistles in a corner.

Among the other common butterflies was the Meadow Brown, the Small Heath, the Hedge Brown (*Maniola tithonus* Linn.), the Small Tortoiseshell (*Aglais urticae* Linn.), the Common Blue, the Large White, the Small White, the Green-veined White and the Small Skipper.

The North Downs near Hollingbourne is another excellent hunting ground for insects. I found a large depression on one of the slopes above the Pilgrims Way. This was covered with long grass and at the top end there was a crumbling wall of chalk. The Dingy Skipper (*Erynnis tages* Linn.), the Small Skipper, the Common Blue, the Small Heath, and the Six-spot Burnet Moth were very numerous flitting from one flower to another and basking in the sun. In one corner a Comma (*Polyommia c-album* Linn.) was sunning itself on a leaf of lilac (*Syringa* sp.) while below on a clump of stinging nettles, larvae of the Small Tortoiseshell and the Peacock were busily eating.

Further up the Downs, where the rabbits and hares scuttled away in front of me, Green Hairstreaks (*Callophrys rubi* Linn.) were very plentiful. They were especially common chasing each other around the many hawthorn bushes. While walking through the long grass I disturbed a female of the Clouded Buff Moth (*Diacrisia sannio* Linn.), the first I had ever seen. I have been told from first hand experience that the Marbled White (*Melanargia galathea* Linn.), the Purple Hairstreak (*Thecla quercus* Linn.) and the Chalk-hill Blue (*Lysandra coridon* Poda) abounded there but I did not come across them.

Perhaps other Members living in this area could add to the above review of the Lepidoptera as I am only there during school terms. 12.63.

John Feltwell (3618J).

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THE GREEN-VEINED WHITE BUTTERFLY.

I have been collecting butterflies for six years, mostly in Bedfordshire, my home county. In that time I

have been able to obtain representatives of most species found in the afore-mentioned area.

Last year (1963) I became particularly interested in the Green-veined White Butterfly (*Pieris napi* Linn.) and I hope that in this article I can show that by both collecting personally and buying the occasional specimen or two from dealers an interesting collection of even the most common species can be built up.

The typical English specimen is quite common in the countryside and can be found in a number of habitats. This species has two 'broods' a year. The first, the spring type, has grey markings on its wings while in the second, the summer type, these markings are black.

The male usually has only one spot on its forewings but a certain proportion, of the spring brood at any rate, has no such spot.

In Irish specimens the markings are much darker — in my specimens from Donegal they are a very deep black. The ground colour, in the same specimens, is of a creamy shade. The butterflies are therefore very different from the English ones.

Scottish ones, in my collection, are of two totally different forms. From Aberdeen I have specimens which are very nearly the same as those found south of the Border. I also have found specimens from Caithness, all of them females. They have a straw-yellow ground colour and dark grey markings. The grey scales on the veins show very prominently.

I also have a number of specimens, again all females, from Austria. These are the var. '*bryoniae flavescens*'. They have a similar ground colour to those from Caithness but have very deep grey markings. The veins are thickly covered with grey scales

and the grey tip to the wing and the two grey spots on the forewing are 'smudged' together. They are about a third as big again as the English specimens.

I have a few Japanese examples, some very similar to English ones, and others, known as var. *nesis* Fruhst., which are as big as the Large White (*Pieris brassicae* Linn.). The grey marks on the forewing are all smudged together and in one or two specimens that I have owned practically the whole of the forewing has been almost obliterated by these dark scales.

This year I was sent a large number of specimens from central France but they appear to be but little different from English ones. I have been promised some specimens of the var. *nepaeae* Esp. (from central France) which has very pale grey coloured veins which do not continue as far as the edge of the wing. I also hope to obtain some specimens from Norway.

Finally I have two forms of the yellow *P. napi*. One, known as ab. *hibernica* Schmidt, is of a bright yellow colour. My specimens are from Donegal. The other, called ab. *citronnea* Frohawk, is a much paler yellow, one of mine being almost a pale green.

From this account of my specimens of the Green-veined White I hope that I have shown how many different varieties of a common species it is possible to acquire. Many of my specimens were bought from dealers, others caught by myself or by fellow AES Members from abroad. Practically all my specimens — I have nearly fifty — were obtained in considerably less than a year. There are still many other forms to obtain, and also 68 other butterflies on the British list, with equally interesting forms.

Terence F. Knight (3190).

THE EFFECT OF THE WINTER OF 1962-3 ON BUTTERFLIES IN SCOTLAND

The severe winter of 1962-3, though perhaps not the coldest, was the longest for many decades. Snow lay on the ground from December to February without even a sign of melting. When it did finally melt, it gave way to continuous periods of rain and cold weather which lasted until early May. Spring weather eventually came with a splendid three weeks in late May and June, but was to give way to more cold, dull weather. From then until the end of August the sun showed its face for a few days, temperatures being well below average for the time of year. A few bright days in September did little to increase the temperature of the air to any great degree.

The effect of these unusual weather conditions on our Lepidoptera is rather difficult, if at all possible, to determine. Wild flowers and shrubs seemed to thrive in the earlier part of the year, fields and banks being covered in a colourful carpet as never before. Populations of *Pieris rapae* Linn. (Small White) and *Pieris napi* Linn. (Green-veined White) seemed to have been unaffected, numbers being as great as ever, but some of the other species were less fortunate — *Polyommatus icarus* Rott. (Common Blue) and *Lycaena phlaeas* Linn. (Small Copper) were greatly reduced in the early part of their season, recovering somewhat later. *Argynnis selene* Schiff. (Small Pearl-bordered Fritillary) hardly flew at all, owing to a continuous period of rain during its time of dispersal, and not one individual of *Nymphalis io* Linn. (Peacock) or *Vanessa atalanta* Linn. (Red Admiral) reached south-west Perthshire.

The effect of climatic conditions and environment on our Lepidoptera

has been fully explained by E. B. Ford (1945 and 1955). Fundamentally the main principles of temperature effects on pigment production are:

1. A high temperature favours the production of leucopteryn (the blacks in Pierinae) and a low one restricts it.

2. A low temperature favours the production of melanin (the blacks in Vanessinae) and a high one restricts it.

Thus the seasonal forms of *Pieris brassicae* Linn. (Large White), *P. rapae* and *P. napi* have a restricted amount of black pigmentation in the spring form and a greater degree of blackening in the summer form (generation 2). The factor of time must not be forgotten when studying seasonal variation as the difference in colouring is caused by an acceleration or retardation of the 'laying down' process. *Aglaia urticae* Linn. (Small Tortoiseshell) illustrates temperature effects on melanin, the extent of blackening being almost entirely due to the atmospheric conditions. Specimens of autumn 1963 and again the spring of this year are well embellished with black scales especially in the costal areas of the forewings, and this is to be expected as this butterfly passed its late larval and early pupal stages (the critical ones) under unusually cool conditions.

The Pierinae of 1963 provide us with a situation far less conventional and considerably more interesting. As has already been mentioned, those insects which appear in spring are, on average, far more lightly marked than the summer form. The reason, it is generally believed, is that the first brood undergo the critical stages at a time when the weather is rather cooler than it is when the summer brood is taking form. In its simplest form this is correct, but other important factors must be at play.

The autumn of 1962 and the winter that followed provided us with sub-arctic conditions hitherto unknown. It would be reasonable to assume that, in the spring of 1963, *P. rapae* and *P. napi* would be of a rather lightly marked nature. Strangely, the reverse was the case. Males of *P. rapae* and *P. napi* were normal in appearance, ranging from medium dark to those lacking the black spot altogether, but females of both species, especially of *P. napi* were on average much darker than the darkest specimen of the normal year. In fact it was impossible to find a typical lightly marked specimen.

In the spring, I collected in both south-west Perthshire and in the Lake District. Apparently the English specimens, though lighter than our Scottish form, were similarly affected. Most specimens of *P. napi* had a tendency for the black spots to join, with a simultaneous encroachment of the black speckling from the base to the central area of the wings. One totally striated variety and several very grey specimens were taken. The ground colour of the wings tended towards a yellowish colour, instead of the light greyish or buff tendencies in normal years, but not on such a general scale as with the black pigment. Only one extreme variety of *P. rapae* was taken in which the ground colour was a deep greenish yellow. Insufficient numbers of generation 2 specimens were taken to compare with previous years but they seemed to be fairly normal in nature.

In theory, markings of the first generation could not have been brought about by temperature alone. Perhaps part of the answer could be that neither *P. rapae* nor *P. napi* appeared in any numbers until the second week in June, some three to four weeks later than usual. The season was cut short in 1962 by the sudden onset of winter, which leng-

thened the larval and pupal stages by some great degree. It would seem, therefore, that this extra time had led to the change, but by the same reasoning one could say that the summer form is darker because of the short period between ova and imago.

We are then left with several explanations, each apparently contradicting each other — but to remain faithful to Professor Ford's explanation, either:

1. A long larval/pupal stage is more important to the production of black pigment than temperature, or
2. The insects passed their late larval/pupal stages at a time when the weather was unnoticeably warmer, or
3. Other factors, more important than temperature or time, have taken control.

Any of these or none of them could be the explanation.

Now that the winter of 1963-4 has passed in a very mild state; spring was spring; and summer is holding to its early promises; has the extreme diversity of our climate of these two years affected our insect populations?

Favourable numbers of most of the species of butterflies found here have returned. *A. urticae*, the Pierinae, *P. icarus*, *L. phlaeas*, and the common Satyrids all carry on their life-cycles with their usual vigour. But, alas, gone is the brown charm of *Argynnis selene*. The winter and summer of the last two years has been too much for the populations of this insect here in south-west Perthshire. However, we must remember that Nature works in a weird and wonderful way and that when an insect disappears from our countryside from natural causes, this is what has been intended for it by the factors which control the balance of Nature.

7.6.64. George Thomson (3689).

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WICKEN FEN

The article under the title 'The Wicken Sedge Fen' in *Bull. amat. Ent. Soc.* **23**: 72, is so full of inaccuracies and misconceptions that I feel another article is called for to put the matter straight.

The National Trust property of Wicken Fen consists of two main portions, separated by the main drainage channel of Wicken lode. The northern portion, Wicken Sedge Fen, was at no time cut down and claimed from the wild. Due to the need for food during the war, however, the southern area, Adventurers Fen, was drained, cleared and sown to crops during 1939-40. In 1952 it was handed back, a mere has been constructed, and fenny conditions are returning.

The Large Copper Butterfly (*Lycæna dispar* Haw.) was introduced to the fen by the late H. M. Edelsten and others and it did survive for many years. It does appear to have been commonest on Adventurers Fen and there seems little doubt that wartime activities were the cause of its demise. But the statement "Thus it was not able to maintain itself (against excessive collecting) in the small acreage it had been left", is very wide of the mark and quite untrue [see footnote]. It is quite clearly stated on all permits to visit Wicken fen that the permit holder agrees "Not to take any specimens of the Large Copper Butterfly, the acclimatisation of which in Wicken Fen is being attempted". In view of the fact that much of the fen was inaccessible to the ordinary visitor I very much doubt that even

the utterly irresponsible collector (I would not use the word 'entomologist' for such a person) managed any excessive collecting of this butterfly. Coupled with the drainage of Adventurers Fen there also occurred during the 1940's a steady growth of Alder (*Alnus glutinosa* (Linn.) Gaertn.) and Buckthorn (*Rhamnus catharticus* Linn.), tending to smother many of the typical fen plant communities and convert the fen into a woodland thicket. This growth takes place partly due to the lowered water table and partly because of the cessation of the four-yearly cutting of the sedge, due to the lack of demand for such material. Strenuous efforts have and are being made to clear the scrub and raise the water table. But this overgrowth by bushes was a contributing cause to the failure of the Large Copper Butterfly to maintain itself.

The same growth also was the most likely cause of the extinction by 1950 of the Swallowtail Butterfly (*Papilio machaon* Linn.) on the fen. Before this time permit holders were permitted to take up to six specimens in any one year. In 1954 an attempt was started to re-introduce the Swallowtail from Norfolk stock and only in quite exceptional circumstances, for some very good scientific reason, would its collection be allowed today. Even though at times it may still appear to be common on some of the Norfolk Broads, its position in this country is somewhat precarious and since ssp. *britannicus* Linn. does not occur elsewhere its loss would be irreparable, as was the loss of *L. dispar* ssp. *dispar* Haw. I would urge all Members of our Society to bear this in mind and, should they desire to have a long series of Swallowtails, then these should be bred, not all caught wild.

The implication in the article "Today one must sign the visitors'

book . . .", is that this is a recent requirement. This is not so, since, from my personal knowledge, it has been in force for twenty-two years and indeed signing the visitors' book was necessary long before 1942 when I first visited Wicken fen.

Finally, the natural food-plants of *P. machaon* ssp. *britannicus* are *Peucedanum palustre* (Linn.) Moench (Milk Parsley, Hog's Fennel) and *Angelica sylvestris* Linn. (Wild Angelica). In confinement it will eat most Umbelliferae and also Rue (*Ruta graveolens* Linn.) but rarely lays on these in Nature. In this respect it differs from other subspecies since ssp. *gorganus* Fruhst. prefers cultivated or wild carrot (*Daucus* spp.) while ssp. *centralis* Stgr is usually found on Rue.

Wicken Fen is very poorly endowed and any Members who feel like contributing to its support may send contributions to Mr D. Briggs, M.A., Ph.D., Treasurer, Wicken Fen Local Committee, Botany School, Downing Street, Cambridge. Much of the clearance work on the Fen is undertaken by the Conservation Corps of the Council for Nature. Younger Members desiring an interesting working holiday couldn't do better than to offer their services to the Corps, although of course there would be no guarantee of being sent to Wicken, since there are many Nature Reserves in need of their services.

30.6.64. Brian O. C. Gardiner (225).

My sincere apologies to the author of 'The Wicken Sedge Fen' and to other Members for an editorial error which made nonsense of the original sentence concerning the Large Copper Butterfly. I misread the date given in the previous sentence (1940) as 1840, and added an editorial comment in brackets accordingly, for it was in the 1840's that the British Large Copper (ssp. *dispar* Haw.) was

finally wiped out by collectors as a result of the rarity value which it had acquired, changes in the habitat playing little part in the final sudden demise of the butterfly. Unfortunately, the editorial square brackets were set as parentheses during printing, and since proof-checking had to be very hurried both errors were missed. My thanks to Mr F. H. Lyon (1025), who first drew my attention to the blunder, and to Mr Gardiner for submitting such an informative article. — Editor.

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A WEEK END IN FEN AND BROAD

Having obtained permits for collecting Coleoptera in Wood Walton Fen in Huntingdonshire, my father and I with my son Philip set off early on the Friday morning in our Dormobile via the North Circular Road for a week-end's bug-hunting. It was a bright July morning and we made very good time, arriving at Huntingdon by 9.30 a.m. We had with us water-nets, a butterfly net, camera and all our camping gear together with pillboxes and tubes, and plenty of hope. We reported to the Warden, Mr Mason, at his house at the end of the lane leading to the Reserve and found him most helpful. He gave us a map of the Fen and told us that the only insect we were not to collect was the Large Copper (*Lycaena dispar batavus* Oberth.) which he was releasing in the Fen. He told us that he collected the larvae after hibernation and bred them out in cages in order to avoid the hymenopterous parasites which attacked so many of the larvae in the final stages. The emerging butterflies he released in the Fen so that they might pair and lay their eggs. He had nearly lost his stock

a few years ago when a mouse had got into the cage and devoured the pupae but he had been able to build up numbers again with stock from Ireland.

We then drove the Dormobile over some of the worst track I have seen for some time. It was undulating peaty soil which was only usable because it was dry. We had the sensation of travelling over a switchback railway and I feared for the springs. The track terminated with a hump-backed bridge over a wide drain, thick with water lilies, and after negotiating this we found ourselves at the beginning of a wide grassy ride leading into the heart of the Fen. We drove to the centre of the Fen along this to a fine thatched bungalow which stands on concrete piles in a clearing. Our first impression was of surprise at the density of the woodland and undergrowth. A wide drain ran alongside the ride and from it branched smaller drains. The sky was beginning to cloud over as we got out our gear and put on our gum-boots. We left the butterfly net behind so that we could concentrate on the water-beetles, and set off along a branch drain accompanied by a swarm of mosquitoes. The edges were dotted with large and small plants of the Great Water Dock (*Rumex hydro-lapathum* Huds.) and Purple Loose-trife (*Lythrum salicaria* Linn.) and thickets of reed (*Phragmites* sp(p).) and undergrowth prevented us from wandering away from the path along the drain edge. We found that netting for beetles was extremely difficult. The drains were choked with two species of duck-weed (*Lemna* spp.) and the net was full to breaking point after a short plunge. We were able to find a few beetles in the debris along the bank side and by sweeping the undergrowth and reeds, but finding the water-netting somewhat laborious we spent the rest

of the time before dinner exploring the Fen with an occasional plunging of the net at random. I caught a specimen of the Spined Loach (*Cobitis taenia* Linn.), a fish which I had not seen before. It is a very local species. We saw some newly emerged Gate-keepers (*Maniola tithonus* Linn.), and a pair of Ringlets (*Aphantopus hyperanthus* Linn.) in copulation. The weather was deteriorating fast and we made our way back to the Bungalow where we had our sardine sandwiches, washed down with some ginger-beer. We signed the Visitors' Book and then made off into a further part of the Fen in the opposite direction. Here there had been a considerable amount of clearing of the undergrowth carried out and there were several large areas of open fen. Dotted all over it were plants of the Great Water Dock, each with a marker cane and metal tab. The Warden had informed us that these markers were used as the basis of a survey of the laying habits of the Large Copper and the growth and survival of the foodplant. The water-netting still produced little and we were a little despondent, when the sun came out for a period of about half an hour. Walking through one of the open areas of fen I put up a female Large Copper. She immediately settled and I was able to take a photograph from about three feet. Philip then disturbed a male and the female joined him whirling around above our heads and then dropping down nearby into the grasses to copulate. We then saw a further male which seemed almost tame as it refused to fly away when approached, obligingly opening and shutting its wings to be photographed. Perhaps years of being photographed has produced a photogenic strain. If the butterfly is naturally so easy to approach there is little wonder at its earlier extermination at the hands of the

collector. Feeling that we had at least accomplished something, we made our way back to the van and as rain seemed imminent we drove back over the bridge and by the bumpy road to the Warden's House where we bade him *adieu*.

We now set off across country in the direction of Norwich and after some thirty miles we pulled into the edge of a large forest of Pine (*Pinus sylvestris* Linn.) and with the help of our 'Gaz' stove prepared an evening meal. The rain held off and we spent the last light wandering along the wide rides between the Pines. We bunked down in the van and soon the roof was rattling with rain which continued all night. We were up at six o'clock and the rain had eased to a light drizzle which enabled us to cook a breakfast in reasonable comfort. Our main discomfort was the appreciation of the extent to which we had been bitten by the mosquitoes on the previous day. My eyes felt very puffy and Philip was stung badly on the face and throat. We found the roads deserted as we drove on to Norwich which we by-passed, using the ring road, and soon we were travelling along the small lanes that lead to the Broad we had as our goal.

We arrived with the rain still falling, and parking the van near a boat-yard we set off into the dense reed beds which flank the Broad. Mingled with the reeds are dwarf willow bushes (*Salix* spp.) and low down are the fronds of the marsh Hog's Fennel (*Peucedanum palustre* (Linn.) Moench) the foodplant of the Swallowtail Butterfly (*Papilio machaon britannicus* Linn.) for the larvae of which we had come to search. We were quickly soaked by the wet foliage and although it had almost stopped raining we were most uncomfortable. Philip found the first larva, a very small one, with its black body and whitish encircling

band half way down its body. This gave us some encouragement and by systematically searching a limited area we found about two dozen larvae. Several were in the last instar and one or two had only just hatched. Some of the butterflies must have been on the wing fairly early and others could have only 'gone over'. We eventually reached the edge of the Broad and watched the sailing boats for a while, taking a few photographs. The rain had now stopped and we made our way back through the reed beds to the van. In some marshy ground quite near to our parking place I found three more larvae of the Swallowtail feeding, all quite large, indicating that the butterfly was quite widespread in the area. We had a meal and as the weather did not appear likely to improve at all we decided to make our way in easy stages back to London. Our first stop was at a stream which led through a tall reed bed to a small Broad. The reeds were over head high and although we found the Hog's Fennel growing sparsely here there were no signs of the Swallowtail Butterfly. There were plenty of fish moving in the stream but the water-net produced no beetles. We found the edges of the Broad dangerous as the whole of the bank seemed to be afloat, moving underfoot, so we decided to venture no further. Our drive home through Thetford Chase and back into the whirl of suburban traffic was uneventful apart from the failure of a front brake which made us swerve violently at each application of the brakes.

The larvae of the Swallowtail were placed on to garden carrot (*Daucus* sp.), and the first pupated on the 18th July; the photographs were moderately successful in view of the weather and although the beetles had not come up to expectations, we considered it a successful expe-

dition. The best beetles taken were *Silis ruficollis* Fab. and *Telephorus* (= *Cantharis*) *thoracica* Olivier on the Fen. Other commoner species were taken on both Fen and Broads, including a number of water-beetles on the former.

23.7.64. P. W. Cribb (2270).

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INSECT FAUNA OF A SANDY BANK

In the summer of 1963 I spent some weeks studying the solitary bees living in exposed sandy banks near my home. A detailed account is not given here for various reasons but I should like to draw attention to the very interesting fauna to be found in this type of habitat. What follows are a few general observations and comments.

The bank consisted of an exposure of loose friable sand of the Lower Greensand (Cretaceous) beds. This coarse sand was well drained and dried up rapidly after rain. Erosion from the action of weather and animals was considerable. Heavy rain washed the sand down and it tended to be blown about once the crust was broken. The temperature of the dry sand changed considerably with weather conditions and time of day. The sand surface remained cool on sunny but windy days, whereas it became hot during calm sunny days.

Very little vegetation grew in the sand: there were a few scattered clumps of grass.

The majority of the insects on the site were species of Hymenoptera. The commonest species other than Hymenoptera was the larva of the coleopteran *Cicindela campestris* Linn.

Formica fusca Linn. was the most common species of ant, and the

foraging workers came in from outside the sandy area.

There were several species of wasp. The members of one unidentified species excavated tunnels in the low vertical face of sandstone at the back of the area, and stocked these with flies which they carried back after catching them in the surrounding areas.

A species of *Ammophila* also occurred, but in smaller numbers. These conspicuous, long-bodied, black and orange wasps make vertical tunnels in the sand, each stocked with a paralysed caterpillar on which is laid an egg. The site for the tunnel seems to be carefully chosen. The wasp excavates vertically into the sand using its jaws, and carries the sand away in its jaws, flying a short distance before dropping it. Very often the sand is dropped in the same place throughout the excavation of the tunnel. When the tunnel is finished the wasp blocks the entrance with a few selected stones, and covers these with sand. In short, the wasp then catches a caterpillar, stings it and drags it back to the area of the tunnel which it re-opens and into which it drags the caterpillar gripping it at the head end with its jaws and backing into the tunnel. An egg is laid on the caterpillar and the entrance to the tunnel is blocked once more. The larva which develops from the egg feeds on the caterpillar. At this stage it can be removed and the development followed by keeping it in a specimen tube.

There was one species of solitary bee (species uncertain) which excavated tunnels into the sand, making several cells out of cemented sand at the base of the tunnel, in each of which it made a ball of pollen grains glued together with honey. A single egg was laid on the side of each of these spheres, and the developing larva fed on the food stores.

The bee showed fascinating behaviour in both the construction of the tunnel and the cells, and in the stocking of the cells with pollen. The tunnel was very often dug in the roots of the grass clumps or in areas of stones. The sand was dug out with the jaws, pushed under the body and pushed out of the tunnel when the bee backed out of the tunnel. Thus a small mound of sand collected at the entrance to the tunnel.

All the tunnels were mapped day by day to show changes in the number of tunnels in use, the time taken in excavation, and the details such as number and times of journeys during the stocking of the cells with pollen. A section of the site was chosen in which all the cells were dug up (only a small area was so treated so as to preserve the population). Measurements were made of the number of the cells and their depth, the size of the pollen mass and the development of the larva. The cells were dug up with a penknife; care had to be taken in digging the cells from amongst grass roots.

Observations were made on the behaviour of the bees during stocking flights to and from the major source of pollen — which was Gorse (*Ulex europaeus* Linn.) — and the tunnel.

Some simple experiments were devised to try to disorientate the bee in its return to the tunnel after foraging. For example, two large cubical blocks were each placed in the same position next to the entrance of each of two tunnels, just before the bees left the tunnels. One of these was moved through 90 degrees in relation to the tunnel entrance after the bee left the tunnel, while the other was left in the same position throughout. Different sized blocks were also tried, and the time before the block was moved was also varied. These experiments did

not seem to affect the bees a great deal, and there were no conclusive results.

Larvae were removed on the pollen store from the cell and kept in darkened specimen tubes. They continued to feed on the pollen mass until they were fully grown, but I did not succeed in rearing them through all the stages. The atmosphere of the tube was kept moist by a cap of wet filter paper in the form of an inverted cone in the opening of the tube.

There are some interesting features of the habitat and the insect fauna. The majority of the species are burrowing insects, and they use the sand because it is easy to dig into. It is also interesting to note that the bees and the wasps both collect food from outside the area.

5.7.64. J. M. Porter (3187).

ENTOMOLOGY IN NEW ZEALAND — 2

Coleoptera (continued *)

The Cleroidea of New Zealand include some very interesting beetles, especially the endemic family Chaetosomatidae. *Chaetosoma scaritides* Westw. is found as adult and as larva in tunnels of other insects in southern beech (*Nothofagus* spp.) and other trees. The larva is predacious, feeding on wood-boring Arthropods. Adult Chaetosomatids are similar to Passandrids in general appearance. Crowson (1955, p.83) states of the Chaetosomatidae: "At present this family appears to be a sort of intermediate stage between Trogositids and Clerids, and may well represent an archaic type of Cleroidea". There are quite a number of Cleridae, mainly species of the genus *Phymatophoea*: predaceous, frequently met-

*from Bull. amat. Ent. Soc., 23: 101.

allic beetles which are sometimes beaten from flowers or foliage. Trogositidae include species of the genus *Leperina*, which occur under loose bark of coastal trees. *Phycosecis discoidea* Pasc. (Phycosecidae) is a small rotund beetle that lives on sandy beaches, and whose larva is often seen running quickly over the sand surface.

Borers of the genus *Anobium* cause considerable damage to wooden houses and furniture. The introduced species (see below) cause most damage, but some of the native species can be destructive to timber. Most native Anobiids, however, seem to be relatively harmless. There are few native Ptinids, and of these, I have found only two specimens of the commonest (*Ptinus speciosus* Broun) in eight years collecting. There is but one endemic Bostrychid, and there are no native Lyctids at all.

The New Zealand Dermestoidea include *Nothoderodontus gourlayi* Crowson, the only Derodontid known from outside the Holarctic region. There are two species of *Nosodendron*, which are found under the bark of trees. Dermestidae include several species of *Trogoderma*, and one of *Hexanodes*. Larvae of *Trogoderma* live under loose bark of *Dacrydium* spp., *Metrosideros* spp. and probably other native trees.

Cantharoids are poorly represented, there being but the genus *Asilis* (Cantharidae) present. These are predacious beetles which are found on flowers and foliage in summer. Their larvae are unknown at present.

There are quite a number of fine Elateridae of fairly large size, but most of these are fairly difficult to identify. The known larvae are mainly typical wire-worms which live in decaying wood, although some of them seem to be carnivorous. There are also some soil-inhabiting species. The adults are

found on foliage, under loose bark or at light, mainly during summer. New Zealand click-beetles are poorly known systematically, but will no doubt receive attention soon because of the economic importance of some of the soil-dwelling species.

Buprestidae are quite poorly represented. *Nascioides enysi* Sharp is a pest of southern beech. Larvae tunnel in the inner bark and are often abundant in trees which have recently been felled. Adults are found during summer, especially in hot sunshine.

New Zealand has about fifty described species of Byrrhidae. These are convex beetles which feed on moss. They are frequently found in the wetter parts of the South Island, but are rare in the far north.

The Helodidae are numerous, both as species and as individuals. Adults are beaten frequently from foliage in late spring and summer. Larvae of some species live in stagnant water, others live amongst rotting vegetable matter or rich leaf litter, and one (*Byrrhocryptus urquharti* Broun) lives in fluvial sands near the water's edge. The Dascilloidea are represented also by two or three species of both Clambidae and Eucinetidae.

The Lucanidae include several large species of *Dorcus* which show allometric development of mandibles and head in the males. Two species are moderately common in some South Island podocarp forests. Further north, species of *Lissotes*, especially *L. reticulatus* Westw., are the common large stag beetles. The genus *Ceratognathus* includes mainly smaller species, adults of which sometimes fly to light. The larvae live in dead, usually rotten, wood, and have been recorded damaging wooden telegraph poles.

Pericoptus truncatus Fab. (Dynastinae) is a large beetle which lives on coastal sand dunes. Larvae live under logs cast up on beaches by

storms, feeding on the wood. Adults are most common in spring. There are three other species of the genus, which are not, however, as common or as widely distributed as *P. truncatus*. The Melolonthinae are represented by numerous species, including the most serious pest of pastures, *Costelytra zealandica* White. This notorious insect causes millions of pounds worth of damage to pastures every year, through its larvae, grass grubs, which feed on roots and native grasses. It is controlled by top-dressing pastures with D.D.T. superphosphate, and does not seem to have become particularly resistant so far. Larvae of the other New Zealand genera (*Odontria*, *Chlorochiton*, *Pyronota*, etc.) feed on roots, but they have not become serious pests like *C. zealandica*. Adults of the genus *Saprosites* (Aphodiinae) sometimes fly to light in summer, or they may be found under the bark of dead coastal trees, together with larvae. There are a few species of *Saphobius* (Scarabaeinae) which are often caught by trapping using rotten meat as bait. The large scarab subfamilies Rutelinae and Cetoniinae are absent from New Zealand, as are the families Passalidae, Trogidae, Acanthoceridae and Geotrupidae. (There is an introduced species of *Trox*, however.)

Anisotomidae are frequently caught in baited traps together with *Saphobius* spp. They normally feed on decaying animal and vegetable matter. Silphidae include *Necrophilus prolongatus* Sharp, found under bird carcasses and in baited traps, and the primitive genus *Microsilpha*. Many species of Staphylinidae and an even greater number of Pselaphidae have been described from New Zealand, but these are mostly poorly known. Species of *Xantholinus* live, with their larvae, in tunnels of wood-boring insects and under loose bark of dead trees. Several

large 'staphs' live amongst decaying seaweed on beaches, especially *Cafius* spp. and *Omalium* spp. One of the most striking species is *Creophilus oculatus* Fab., a stout, black beetle with a prominent red spot behind each eye (often mistaken for an eye by non-entomologists).

New Zealand has several species of Histeridae, the largest of which is *Sternaulax zealandicus* Mars. Larvae of this species live under bark of dead coastal trees, where they feed on beetle and moth larvae. Most of the other species are rare and small.

The Hydrophilidae include about 60 New Zealand species, many of which are not, however, true water-beetles, but live as larvae and adults in damp leaf litter. Adults of the genus *Rygmodus* are frequently beaten from shrubs and trees in late spring, and during summer in the mountains. The water-inhabiting species live mainly in pools or rivers. There are a few species of Dryopidae, the larvae of which are found sometimes in fairly swift streams, where they feed on algae. The only other water-beetles occurring in New Zealand are a species of *Gyrinus* and about fifteen species of Dytiscidae. The latter family includes the almost cosmopolitan *Rhantus pulverulosus* Steph., and *Lancetes lanceolatus* Clark, which occurs also in Australia. Both species seem to have reached New Zealand by their own flight, and there is no sound reason for regarding either as introduced. Although most New Zealand insects are endemic at the specific level, there are exceptions which almost always have an efficient means of aerial dispersal (strong flight in the case of the Dytiscids, *Herse convolvuli* Linn., *Locusta migratoria* Linn. and other large insects).

There are five species of *Rhysodes* (Rhysodidae) in New Zealand, all of which are found in the north of the

North Island in rotten wood. The Carabidae include many large flightless species, mostly with fairly limited ranges, and often exhibiting considerable geographical variation. The genus *Mecodema* (Broscini) includes about 60 species of moderate-sized to large, flightless beetles, which are found under logs and stones in native bush and tussock country, and sometimes in exotic plantations. The front legs are modified for digging, and the beetles often make tunnels in the topsoil. Some species exceed thirty mm. in length, and as they have large mandibles need to be handled with care. The Pterostichini are represented by *Megadromus*, *Holcaspis* and some smaller genera, which are like *Mecodema* in their flightless condition, but are usually more widely distributed and better able to adapt themselves to modifications of their habitats. In the far north the common large flightless Carabids are species of the genus *Ctenognathus* (Agonini). Also in the far north are several genera each containing only one or two known species, and apparently relics of an earlier warmth-adapted fauna which mostly became extinct during glaciations of Pleistocene times (e.g., *Maoripamborus fairburni* Brookes). The relict southern tribe Migadopini is represented by *Amarotypus edwardsi* Bates, which lives on moss-covered *Nothofagus* spp., and in New Zealand's subantarctic islands by the genera *Loxomerus* and *Calathosoma*. There are about fifteen native species of tiger beetles of the genus *Cicindela*.

The Stylopoidea are represented by a single known species of *Elenchus*, which parasitises Jassidae (Homoptera) (Gourlay, 1953).

This account has deliberately omitted reference to introduced Coleoptera so far in order to avoid confusion with the native fauna. Some of the most common beetles

in the more densely settled parts of New Zealand have been introduced mainly accidentally. Many of the introduced beetles were brought originally from Britain, which has always been the most important source of goods imported into New Zealand, but most of the species concerned have a virtually cosmopolitan distribution. Quite a number of species have been introduced from Australia at various times, and others are known to have come from South America or South Africa. In recent years strict quarantine regulations have greatly reduced the number of introductions, but new species are still being found; although it is not certain how many of these have been established for some time but only discovered recently.

Beneficial introductions include the Carabids *Rhytisternus miser* Chaud (Australia), *Laemostenus complanatus* Dej. (cosmopolitan); various Staphylinids; Coccinellidae such as *Coccinella 11-punctata* Linn., *C. leonina* Fab., *Leis conformis*, Boisd., *Rhizobius* spp., *Orcus chalybeus* Boisd., *V. edalia cardinalis* Muls. (which controls the cottony cushion scale *Icerya purchasi* Mask.); the Chrysomelid *Chrysolina hyperici* Forst. which controls St John's Wort (*Hypericum* spp.); and others.

The majority, however, are more or less serious pests. These include *Tenebrioides mauritanicus* Linn. (Trogositidae); *Carpophilus* spp. (Nitidulidae); *Oryzaephilus surinamensis* Linn. (Silvanidae); *Dermestes* spp. and *Anthrenus* spp. (Dermestidae); *Necrobia* spp. (Cleridae); *Ptinus* spp. (Ptinidae); *Anobium punctatum* Deg. and others (Anobiidae); *Lyctus brunneus* Steph. (Lyctidae); several Elateridae; *Alphitobius* spp., *Tribolium* spp., *Gnathocerus cornutus* Fab. and *Tenebrio* spp. (Tenebrionidae); *Paropsis* spp. (Chrysomelidae); *Bruchus* spp. (Bruchidae); *Bethelium signiferum* Newm., *Phaenocarpa semipunctata* Fab., *Tessaromma*

undatum Newm. and other Australian Cerambycidae; *Otiorrhynchus sulcatus* Fab., *Anthonomus pomorum* Linn., *Phlyctinus callosus* Lea, *Listroderes obliquus* Klug, *Calandra* spp. and other weevils; *Heteronychus sanctae-helenae* Blanch., *Aphodius granarius* Linn., etc. (Scarabaeidae). Many of these species are quite familiar to British entomologists.

It is interesting to note that *Coccinella 11-punctata*, which in Britain is predominantly a coastal species, has been observed in New Zealand swarming on the summits of mountains over 7,000 ft in height. This type of swarming on mountains is quite common in some other ladybirds, especially in North America, but does not seem to have been recorded for *C. 11-punctata* from anywhere other than New Zealand.

Diptera

"Knowledge of New Zealand flies is far from complete. Species already known number about two thousand, and many more await discovery. Of the described species, many are known from one or few specimens, adequate information on distribution is lacking, and, as in other groups, the older descriptions are so brief that the species cannot be recognised. New Zealand Diptera lacks any major text and the literature is scattered in New Zealand and overseas journals." (Harrison, 1959).

Nematocera. The family Tanyderidae, including the most primitive of all living Diptera, is represented in New Zealand by five species of *Mischoderus*. These are slender flies with prettily patterned wings, with venation rather like that of Mecoptera. Crane-flies (Tipulidae) include 524 known New Zealand species, thus comprising about one quarter of the known dipterous fauna. Many of the species are large, and some have striking wing markings which are readily recognised. Adults fre-

quently enter buildings at night, or may be seen swarming, especially at sunset. *Aphrophila* spp. live in the spray of waterfalls and cascades. Larvae of Tipulids are found frequently in rotten wood, moss or soil, particularly in damp places, and some are aquatic. *Zaluscodes aucklandicus* Lamb is a peculiar wingless species found on the subantarctic Auckland Islands.

There are thirty-four species of Psychodidae recorded from New Zealand, belonging chiefly to the genera *Pericoma* and *Psychoda*. Several species breed in the trickling filters of sewage purification plants. *Nemopalpus zelandiae* Alex. is a hairy fly rather like a mosquito but with wing venation allied to *Phlebotomus*, and certain similarities to Tanyderidae. The blood-sucking Phlebotominae are absent.

Culicidae are represented by only twelve known indigenous species and two introduced species, but some of these are present in vast numbers of troublesome individuals during the warmer months of the year. The most common species is *Culex pervigilans* Berg., although the introduced *C. fatigans* Wied. is fairly common in the north. The latter species is a vector of elephantiasis in the tropics, but fortunately *Wuchereria bancrofti* Cobbold, the parasite causing this disease, does not occur in New Zealand. The salt-water mosquito, *Opifex fuscus* Hutt., is found along the rocky coasts of the North Island. The adults are large black mosquitoes; the males are unusual in having only three large antennal spines instead of the densely plumose antennae characteristic of most male mosquitoes. The early stages of this species live in brackish pools above high water mark. *Corethrella novaezealandiae* Tonnoir lacks a projecting proboscis, and does not bite. There are no Anopheline mosquitoes in

New Zealand.

The nematocerous families Anisopidae, Trichoceridae, Dixidae, Bibionidae, Scatopsidae and Thaumaleidae each have a few New Zealand species.

There are forty-one species of Chironomidae known from New Zealand. The largest and commonest of these is *Chironomus* (s.s.) *zealandicus* Huds., which sometimes swarms in vast numbers near lakes or large ponds, especially eutrophic waters. Adults fly to light, thus becoming a nuisance when swarming occurs near settlements, as it did recently near Auckland. Larvae are typical bloodworms, which construct tubes of soft mud in which they live. They are indiscriminate feeders on microscopic algae, which they ingest along with any other fine particles suspended in the water. Pupae, which are of the usual *Chironomus* type, remain in the larval mud tubes until mature, when they rise to the water surface, and adults emerge. Eggs are laid in large numbers, embedded spirally in a gelatinous matrix, usually attached to stones, plants, etc., near the water's edge. Some of the chironomid species have larvae which inhabit streams. Recently a marine chironomid larva belonging to the subfamily Clunioninae was discovered living on intertidal rocks on the west coast near Auckland, but it has not yet been described.

Over 200 species of Mycetophilidae are recorded from New Zealand. The best known is the famous 'glow-worm', *Arachnocampa luminosa* Skuse. The larva lives in caves, tunnels and dense, dark, damp bush, where it spins a sticky web. The luminous organ is situated in the terminal abdominal segment. Light from this is said to attract small insects, which become entangled in the web, and are then consumed by the larva. The pupa and the adult female are slightly luminous also. An entertaining account of this species is

given by Hudson (1950, pp. 15-37). A well-known limestone cave popular with tourists at Waitomo is lit by millions of glow-worms.

The Simuliidae are represented by about ten species of *Austrosimulium*. These swarm in the neighbourhood of running streams, where they bite viciously, and can make picnics by the river side miserable. Larvae live in streams, where they attach themselves to stones or water-plants. Larvae of Blepharoceridae are found in similar habitats. Adult females are predacious, but fortunately confine themselves to small insects, and do not attack man. There are some Ceratopogonidae in New Zealand, but none that attack vertebrates. The larva of *Forcipomyia antipodum* Huds. is found under bark of newly fallen trees, where it feeds on sap.

There are about thirty known species of gall midges (Cecidomyiidae). Two introduced species which are serious pests are the pear leaf-curling midge, *Dasyneura pyri* Bouché, and the hessian fly, *Mayetiola destructor* Say, which damages wheat (*Triticum* spp.).

Brachycera. About twenty species of Tabanidae are known from New Zealand, but these seldom suck blood, being content to feed on nectar. Their larvae, which are predacious, live in moist soil. Stratiomyidae (thirty species) are found frequently on flowers during summer.

Therevidae (twenty-two spp.) fall mainly in the genus *Anabarynychus*. The peculiar many-segmented larva of *A. bilineatus* Fab. lives in sand just above high water mark on beaches, while larvae of other species live in rotten wood.

The families Leptidae and Bombyliidae each have one, and the Cyrtidae seven New Zealand species.

There are but fourteen species of Asilidae recorded from New Zealand. These are mostly large, conspicuous

flies, apparently generally predaceous on a wide range of insect prey. The smaller predaceous Empididae are represented by more than 100 known species, and 110 species of Dolichopodidae have been recorded. *Cyclorhapha*. Phoridae are represented by twenty-nine New Zealand species, including the remarkable *Sciadocera rufomaculata* White, which is intermediate in some features between this family and Platypezidae (one sp.). Four species of *Pipunculus* (Pipunculidae) have been recorded: their larvae parasitise fulgoroid Homoptera.

Hover flies (Syrphidae) are common (forty indigenous and four exotic species). Larvae of *Helophilus* are 'rat-tailed maggots' which live in mud and stagnant pools. Larvae of *Syrphus* are slug-like, and feed on a variety of insects attacking foliage (e.g., aphids and larvae of moths).

The New Zealand Acalypterata flies have recently been monographed by Harrison (1959). In this important study 233 species are recorded, including thirty-eight immigrant species. There are twenty-one families represented, which is too many to discuss each separately here. The fauna consists of 76 genera, twenty-eight of which are endemic, thirty-seven indigenous, and eleven recent immigrants. Of the thirty-seven indigenous genera, three are confined to Australia and New Zealand, two to South America and New Zealand, and the remaining thirty-two extend over a much wider range. There are several archaic and aberrant forms, e.g., species of *Huttonina*, *Protoborborus* and *Teratomyza*. Many New Zealand genera do not fit readily into present-day concepts of families. All the indigenous acalyptrate species are also endemic.

Blowflies (Calliphoridae) are abundant during summer. There are sixteen indigenous species recorded,

mainly of the genus *Calliphora*, and two introduced species (*Calliphora erythrocephala* Meig. and *Lucilia sericata* Meig.). Any of the species are likely to blow meat if they have the opportunity. *Calliphora laemica* White and *Lucilia sericata* are responsible for blowfly strike in sheep. Eggs are laid on soiled wool around the crutch, and the maggots often penetrate the skin. Blowfly strike is controlled by shearing off the soiled wool, i.e., crutching.

Muscidae (including Anthomyiidae) number about 70 indigenous species, placed mainly in the genera *Hylemya* and *Limnophora*. Flies of the latter genus are found resting on stones in or near streams, and fly up to and seize other insects (especially mayflies), which they suck dry. *L. flaviventris* Malloch is said to resemble a raindrop when seen from in front. The remarkable *Exsul singularis* Hutt. has been observed feeding on a Trichopteran. Introduced Muscids include the familiar pests *Musca domestica* Linn. and *Stomoxys calcitrans* Linn.

Tachinidae are numerous (130 species recorded), and some are important in controlling lepidopterous pests. *Prothysticia alcis* Walk. is found in pastures in the spring, where it lays live maggots that seek out and parasitise *Porina* caterpillars. *Cerosmyia* spp. have been recorded parasitising moths of the genera *Leucania*, *Melanchra*, *Nyctemera*, *Oeceticus*, *Oxycanus*, *Proteodes* and *Tyria*.

As there are no indigenous terrestrial mammals in New Zealand, it is not surprising that there are no native Oestridae, whose larvae parasitise mammals. There are three introduced species, however.

Hippoboscidae are represented by a single known species, *Ornithomyia opposita* Walk. The sheep ked, *Melophagus ovinus* Linn., has been introduced.

24.8.64. J. C. Watt (3578).

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J.C.W.

CASUAL OBSERVATIONS
ON ITALIAN LEPIDOPTERA

The rather ambiguous title attempts to condense the following account of five part-day excursions during the course of a fortnight in Italy on business in May 1964. It is not 'done' for an engineer inspecting roads to be blatantly equipped with a full kit of an entomologist — and in any case the limitations of baggage weight by air transport forced me to keep my equipment to a minimum. Nevertheless these five trips resulted in over forty different species of butterflies, plus a few moths which were taken only when there were no butterflies in sight of particular interest to me. Usually I only took one example of the commoner butterflies which are also found in Britain, although I tried to examine at least one of each species to make sure there were no noticeable variations. I had been told by Mr P. W. Cribb (2270) that this was a wise practice, and in fact I found it so — an example being that what on casual observation I had taken to be the Grizzled Skipper (*Pyrgus malvae* Linn.) turned out to be *P. sao* Bergstr. There were other 'skippers', as well as 'blues',

fritillaries, etc., which proved this to be worthwhile.

My equipment, then, was rudimentary — a folding pocket-net without handle (though I usually found a suitable stick on the field of operations), two or three pillboxes, and a cigarette box filled with layers of cotton-wool between which specimens were placed in the field and properly papered at night on return to base. I did not attempt to do any setting as I had few spare evenings anyway and even the papering often took until well after midnight. When papered the day's catch was stored in flat cigarette tins, carefully labelled on the outside, as well as on each paper, with date and location, and the inside of the tin liberally sprinkled with camphor. On a previous short trip to Switzerland last year I had found that it was quite possible to set specimens and bring them back in a home-made travelling box consisting of a deep (100 size) cigarette-box lined with cork cut from a table mat just the right size to fit tightly into the bottom of the box — on top of this was glued a second layer of cork cut in strips to leave varying widths of groove for the bodies, and varying widths of strip for the wings. A large number of boxes would have been needed in Italy this year (and it would have meant a prohibitive increase in baggage), but for the few specimens I took in Switzerland in one spare lunch-hour — a male Purple-edged Copper (*Lycaena hippothoe* Linn. var. *eurybia* Ochs.) and a couple of Small Mountain Ringlets (*Erebia epiphron* Knoch), it was ideal.

As I did not know where to look for specimens, my excursions were rather hit-or-miss. On my first free day (10th May) I left Rome for the distant mountains: from the map it seemed Tivoli was the most likely station at which to alight and in fact a short walk took me to the open country. Along a high hedgerow

I saw my first 'Sulphur' (*Gonepteryx cleopatra* Linn.) but it was far out of reach of my pocket-net. In the train both on the flat plain and in the foothills approaching Tivoli I had already seen several examples of the Swallowtail (*Papilio machaon gorganus* Fruhst.) and the smaller Fritillaries (*Melitaea* spp.) but these were much scarcer as I left the road and climbed a sloping hillside planted with Olive trees (*Olea europaea* Linn.): here the chief residents were the various whites, including *Leptidea sinapis* Linn. (Wood White) and an occasional Orange Tip (*Anthocaris cardamines* Linn.) — one of which I found at home to be instead *Euchloe crameri* Butler, with its noticeably different underside to the hindwings. *Vanessa cardui* Linn. was also seen, together with many of the 'browns', of which the Large Wall (*Pararge maera* Linn.) was the only new species for me. The examples of *P. aegeria* Linn. (Speckled Wood) were of course the typical form with gingery ground colour instead of the pale yellow of the British race *aegerides* Stgr. On the open hillside there were fewer butterflies but returning to the flatter grass by the road I found a number of 'blues' (mostly *Polyommatus icarus* Rott.; *Aricia agestis* Schiff., and *Lycaena phlaesa* Linn.) I examined several of the latter but none displayed any wide variations, nor the blue spots (var. *caeruleopunctata*) which I find common here in Scotland. The females of *P. icarus* were all uniformly brown with none of the blue scaling common in Britain. There were several large nests of larvae on hawthorn (*Crataegus* sp.) and other bushes by the roadside: I could not cope with a large collection of living larvae but took two of the largest from one colony and successfully kept them on my hotel balcony for the next fortnight. Unfortunately I could not identify them or the

bush from which they were taken, nor find suitable food on my return home, and they died without being definitely named — they seemed to be like the Lackey Moth (*Melcosoma neustria* Linn.).

During the next week I had only two spare afternoons so that it was not possible to travel far from Rome but as the grounds of my hotel in the N.W. suburbs furnished occasional examples of *V. cardui*, *V. atalanta* Linn., 'browns' and 'blues', and even one or two *P. machaon gorganus*, I thought the nearest countryside worth trying. The local trolleybus terminus was only about five minutes walk from a sheltered valley with rough grass, marshy in places, and with shrubs and trees on the slopes. Despite quite a strong wind there were plenty of butterflies, with Swallowtails well represented: the wind probably helped me take these in my pocket net, although it was an energetic task. As well as *P. m. gorganus* there were a few *P. podalirius* Linn., and so another new species was added to my collection! This valley was visited on May 12th and 16th, yielding twenty-six different species at least. Here were a large number of 'skippers', including *Ochlodes venata* Br. and Grey; *Thymelicus actaeon* Rott.; *P. sao* (mentioned in my opening paragraph), and *Carcharodus alceae* Esp., which I similarly mistook for the Dingy Skipper (*Erynnis tages* Linn.). In the grassy valley bottom a number of small fritillaries appeared occasionally, including *Melitaea didyma* Ochs., *M. athalia celadussa* Rott., and on the second visit, four males of *M. phoebe* Knoch. The latter, in particular, were rather small. On the hillside I found a number of Green Hairstreaks (*Callophrys rubi* Linn.) which were easily taken whilst resting on sloe bushes or on the grass. Down in the valley again a solitary example of *Limenitis sybilla* Linn. (= *anonyma* Lewis) eluded

me for some time but was eventually netted. I only saw one other example of this species later on, in an Alpine valley, but that one got away! A second similar valley a half-mile further out from Rome produced similar species and in addition my first example of *Aporia crataegi* Linn., which I was not expecting and may have previously passed over as being merely *P. brassicae*. Later, in the Alps, I was to become surfeited with *A. crataegi*, but here there could only have been a few. A number of *Colias* species were seen flying fast in a north-easterly direction but none were taken and I could not identify them on the wing.

I had no opportunities further south, nor on the long journey from Naples to Turin except for a brief stop near Orvieto where a grassy slope on a river valley was frequented by *P. machaon*, *Melitaea* species, and *O. venata*. From Turin my business took me to St Vincent in the Aosta Valley of the Italian Alps. Here I had a full afternoon to spare and five minutes walk from the hotel led me to an alpine valley with well-wooded sides and a trickle of water along a rocky channel at the bottom. It was heavy going amongst the stones and bushes, but a fifty-yard length provided enough variety for several hours' observation without monotony. There was a grassy slope at one side profuse with wild flowers where many varieties could be taken at rest, but everywhere *A. crataegi* was so abundant as to be almost a nuisance. *P. aegeria*, *P. megera*, and *P. maera* were flying together in fair numbers, and *L. sinapis* was also abundant. One example of *Polygonia c-album* Linn. was seen and taken, and the other Vanessids *V. cardui* and *V. atalanta* were also present. But the greatest thrill — and exasperation — was to see several specimens of *Nymphalis*

antiopa Linn. flying fast up the valley, usually out of reach and certainly so when resting on high branches! Late in the afternoon I did manage to find one resting on a large rock and this was duly netted, but there were at least three others.

The grassy patch produced several small fritillaries such as *Argynnis euphrosyne* Linn. and *Melitaea cinxia* Linn., but I was more thrilled to take a pair of *Argynnis lathonia* Linn. A single Silver-washed Fritillary (*Argynnis paphia* Linn.) rested on a leaf of bramble (*Rubus* sp.) long enough for me to identify it but eluded my net, as did the solitary *Parnassius apollo* Linn. which passed up the valley that afternoon. A number of 'blues' were taken 'in case' and were found to include *Cyaniris cyllarus* Rott., similar to the Mazarine Blue (*C. semiargus* Rott.); *Lysandra orion* Linn., a larger blue with the females a deep blackish-brown and both sexes heavily marked with black spots on the underside; and an apparent Adonis Blue (*Lysandra bellargus* Rott.) which was found to be *Polyommatus hylas* Esp.

Climbing from the valley to grassy slopes further up the hillside produced more of these 'blues', a number of *Colias* of which the only one I could take proved to be *Colias hyale* Linn., and for me another exciting 'first' in the form of *Hamearis lucina* Linn. (Duke of Burgundy). *Papilio podalirius* was also present in this valley though outnumbered by about three to one by *P. gorganus*, and a single *L. sybilla* was also seen.

The next day we went through the new road tunnel into Switzerland but although fine and sunny, and *C. hyale*, *croceus*, and *A. crataegi* were seen around Aosta on the Italian side, I was very disappointed to see few butterflies along the roadside near Bourg St Pierre — only one *Aglais urticae* and one *M. cinxia* being seen.

Before returning home I had a whole day to spare and thus the opportunity to explore the Italian lakes area around Como. The day being Sunday and very hot, I kept away from Como itself and took the train to Asso, a small town to the east. Walking northwards my first attempt to leave the road was foiled by a farmer who was fearful that I would trample down his grass which was just ready for haymaking. Here there were Large Walls in abundance, Walls as well, and a profusion of 'skippers' — mainly *O. venata* but also a few *P. sao* and 'blues' including *C. cyllarus* and *L. orion* as at St Vincent. *Cupido minimus* Fuessl., was present as well. Returning frustrated to the road I went on to where the valley widened out again: here there were a fair number of *Colias* species, but usually flying fast and only lingering safely in the middle of clover (*Trifolium* spp.) or hay fields where I dare not hunt them. Working my way towards the hillside again I kept meeting *A. crataegi*, *L. sinapis* and *A. cardamines* but there were few of the brown woodland species as I left the flat plain and started to climb. There were several grassy meadows amongst the trees and in one such clearing I found quite an abundance of *Carterocephalus palaemon* Pall., an identical form to our own Chequered Skippers, as well as more *C. rubi* and *H. lucina* which were easily taken when resting on flowers or on the grass. *Melitaea* species found here were *M. didyma* and *M. athalia celadussa*, rather more abundant than at Rome. One solitary *P. m. gorganus* was seen, and also a Comma resting on a bramble leaf — this was most likely *P. c-album* although as I did not see its underside I cannot be sure.

On the way back to the station with my collecting box well-filled I took a couple of moths which turned

out to be the Black-veined White Moth (*Idaea lineata* Scop.), and also three very tiny black larvae feeding on bramble — these were barely a quarter of an inch long, but survived the flight home without food and although they refused the Scots bramble, they fed voraciously on my beech hedge (*Fagus sylvatica* Linn.) until, to my surprise, the third skin shedding revealed a bright green skin! Two successfully pupated, forming light brown cocoons in the beech leaf, and I am now waiting to see if they are, as I suspect, Emperor Moths (*Saturnia* sp.). Large nests of what I think were Lackey larvae were also seen, and others containing a white larva with black spots — perhaps the Magpie Moth (*Abraxas grossulariata* Linn.)? As the bushes were completely defoliated I could not identify their foodplant and with two families of larvae to cope with already I decided to leave them in peace.

Thus ended my first serious attempt at European collecting and considering it was a business trip with limited opportunities and equipment, my catch of 150 selected insects including *P. podalirius* and *N. antiopa* was not too bad. More than the actual catch, however, the increase in my knowledge of the localities frequented by many species difficult to find in Britain was most useful. 28.8.64. D. H. Fletcher (3620).

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 Additional identification by P. W. CRIBB (2270).

JUNIOR NEWS SECTION

I expect you are all settling down to sorting out and dealing with the excellent captures you made in the glorious summer. I do hope you will let us know if you found anything

interesting.

St Ivo School Entomology and Natural History Society made its annual safari south this year. We went booted, rucksacked and suitably equipped to the Isle of Wight, Isle of Purbeck (Swanage) and the New Forest, staying in Youth Hostels. We were lucky enough to be shown round a nature reserve at Studland Bay (Swanage) by Mr Copland of the Nature Conservancy and the Warden of the reserve. Mr Copland also brought along some slides in the evening and gave us a most interesting talk on the Nature Conservancy in England. The Warden of Southampton Youth Hostel, Mr Vernon, is a keen bee-keeper and on the last evening of our trip entertained us with some excellent slides showing various aspects of the life in a hive of bees (*Apis mellifera* Linn.), and pictures of bumble bees (*Bombus* spp.), solitary bees, and flies that mimic bees and wasps.

Several Vipers (*Vipera berus* Linn.) were seen and a Smooth Snake (*Coronella austriaca* Laurenti) was caught on our second day in the New Forest. However, as most of our Members are coleopterists we made every effort to catch at least a glimpse of the 'king' of beetles—the Stag Beetle *Lucanus cervus* Linn. We made several sorties into Rhinefield where they are supposed to abound but found nothing but a small piece of abdomen. It was only the Bloody Nosed Beetles (*Timarcha tenebricosa* Fab.) and Wood Tiger Beetles (*Cicindela sylvatica* Linn.) found at Swanage which managed to make up for our disappointment. Back in the New Forest the party was kept contented by the vast numbers of beetles found in horse and cattle dung.

Julian Francis, our president, made several exciting catches. He is a keen Orthopterist and was especially pleased to find the little black Wood

Cricket (*Nemobius sylvestris* Bosc.) and the Bog Grasshopper (*Mecostethus* (= *Stethophyma*) *grossus* Linn.), which cost him a bootful of rich brown mud. *M. grossus* is larger than most British shorthorn grasshoppers (Acrididae) and is olive green, with a yellow strip down the length of the forewing and red and yellow legs. This species cannot be confused with anything else.

Our president was almost lost to us as a great horsefly (*Tabanus* sp.) attempted to carry him off from a pinewood where we were busy collecting the Great Raft Spider (*Dolomedes fimbriatus* Clerck) which is considered to be Britain's largest and most beautiful spider. It is velvety chocolate brown with a 'Sudz' white stripe along its sides. *D. fimbriatus* spends its time in forest bog areas hunting luckless insects which fall into the water.

For anybody interested in spiders (J. H. Fabre, the great French naturalist, said that spiders can be considered insects for study purposes and who are we to argue with the great Jean Henri) there is a new society called the British Spider Study Group, c/o D. W. Mackie, 11 Ashmore Avenue, Cheadle Heath, Stockport, Staffordshire.

St Ivo's vice-president Clem Tacconi has taken up the collecting and study of Hemiptera. He discovered quite early on in our New Forest expedition that carnivorous bugs will taste humans if nothing else is available. I wonder how often we have blamed gnats for bites which have been made by predatory bugs. Clem was hoping to study froghoppers (Cercopidae) but cannot find any books dealing with these animals. Can any of you help him with this problem?

Have you been kept awake through-out August and September by the never-ending stridulation of that brown and green rascal the Autumn

bush Cricket (*Pholidoptera griseoptera* Deg.)? As you know, the members of the family to which this insect belongs — the Tettigonidae — were often called longhorn grasshoppers, but as they rarely eat grass and are much more often found in bushes hunting for insects they are more correctly called bush crickets. Although female specimens of *P. griseoptera* make themselves conspicuous by frightening the life out of unsuspecting mothers by appearing suddenly on the dressing-table in mid September, they in fact hatch from their eggs in early spring long before grasshoppers appear. They are probably the longest living of all British Tettigonids. It would be rather interesting to see who can be the first to find a tiny nymph of this species next spring.

John Gill (3566J) tells me that mention of his interest in swallowtail butterflies in last February's News Section has resulted in contacts with a local Member and with an American Member. He also has some interesting observations on the Vanessids of his area: John writes "During the past five years I have noted only four specimens of *Vanessa cardui* Linn. (Painted Lady) on the *Buddleja* bushes near my home. However, I saw about two dozen specimens in one day early last week; as many as seven on one bush. Also the numbers of *Vanessa atalanta* Linn. (Red Admiral) have increased . . . Perhaps other Members could let me know if this notable increase is widespread."

Has anyone any ideas how the following insects obtained their English names:

Ocyrops olens Muell. — Devil's Coach Horse

Coccinellidae — ladybirds

Dermaptera — earwigs

Vanessa atalanta Linn. — Red Admiral Butterfly.

St Ivo still have spare Indian stick

insects (*Carausius* (= *Dixippus*) *mosus* Br.) and can offer these and other odd insects free to AES Members.

28.8.64.

H. J. Berman (2941A).

LETTERS TO THE EDITOR

Sir, — After reading the two recent articles on *Volucella zonaria* Poda, by Mr H. V. Danks and Mr A. W. Jones in the November 1963 and May 1964 *Bulletins* respectively (*Bull. amat. Ent. Soc.*, **22**: 140; **23**: 54-5), I also should imagine that Mr Danks has been very lucky to find this impressive insect extremely common in north-east Surrey.

Although I lived in Croydon for three and a half years I only once had the privilege of seeing this insect which was at rest on a garden wall in Whitehorse Road, Croydon. This was in mid-September 1963. Incidentally I was not carrying a receptacle to capture the specimen — an omission from which I am still smarting!

21.5.64.

M. O. Hughes (3612).

Mr Danks comments:—

Volucella zonaria seems to be somewhat less common this year than during its apparent abundance of 1963, but although I was abroad for five weeks at the beginning of its season and have been unable to search for it since, several specimens have appeared in my own garden at Surbiton. As mentioned by Colyer and Hammond (1951) it occurs on Wimbledon Common, and it seems to be fairly generally distributed in that area as other entomologists have informed me that they have found it there.

The area in which I live is some four or five miles to the south-west of Wimbledon Common, and I am certain that *V. zonaria* is breeding nearby. The commonest species of

social wasp in the immediate vicinity is *Vespa germanica* Fab., although *V. vulgaris* Linn. does occur.

The fact that *Volucella zonaria* has been seen at Wimbledon, at Croydon (some ten or eleven miles to the south-east), as well as in other parts within a radius of several miles of my own area—it was recorded from Kew, several miles to the north, as long ago as 1946, for instance (see, for example, Airy Shaw, 1955)—would seem to indicate that it is generally to be found in this region. In my experience it is now common, but it appears that I may have been fortunate as it is an insect which is not likely to be easily missed by other entomologists.

Have any other Members found it in this area or elsewhere? I should imagine that if it is well-established in this part of Surrey it may be spreading even further north.

31.8.64.

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Sir, — What a refreshing and welcome breeze swept through the pages of the February *Bulletin*, fanned by letters from Mr John Moore and Mr W. E. Collinson (*Bull. amat. Ent. Soc.*, **23**: 11-13 and 32-3).

How they echoed my own views on the undue emphasis placed on the so-called scientific aspect of collecting. But for real down-to-earth debunking of scientific posturing let me commend readers to P. B. M. Allan's book '*Moths and Memories*', and the chapter on 'Letters and writers'. Here are just a few choice extracts:

"There is no science whatever in catching insects for our collections."

"Why in the name of all that is wonderful do we throw dust in our own eyes by pretending that our

ensnaring of moths, etc., . . . is a scientific pursuit"

"We do not catch and breed and set and store insects for any other purpose than our own pleasure."

There is much more in the same strain in the chapter in question, couched in terms guaranteed to penetrate the carapace of the most bigoted.

I have been collecting for over 60 years and in that period have met numerous entomologists, but as far as recollection goes, they were collectors like myself. I just cannot imagine them going about with a Tilley lamp in one hand and a notebook in the other.

Now for the literary aspect of contributions.

Under the present regime, what is served up on the plate is apparently of less importance than the meticulous and scientific arrangement of parsley around the edges, judging by the four columns of Guidance for Authors in the February issue of the *Bulletin*. I cannot imagine anything more calculated to scare away budding contributors than this bewildering array of rules and regulations. What a contrast this makes to the Editorial in Vol. 8 of the *Bulletin*, page 23. "It is, naturally, quite impossible to please everyone all the time. But it might be said, in general, that the *Bulletin* is not intended to be a "scientific journal"; it is for young and old, beginners and experts, and for all interests".

This leads me to the problem of scientific names.

In the New Naturalist series, E. B. Ford, the author of the two volumes '*Butterflies*' and '*Moths*', states: "I have used both English and scientific names the first time that a species is mentioned in each chapter, but subsequently the English ones only." The present trend in the *Bulletin* is to plaster Latin names after every common or garden

ference to plants, trees, insects, animals and birds. No wonder P. M. Allan wrote: "Can any printed matter be more tedious to read than one in which paragraph after paragraph is thick with scientific names printed in italics".

1.5.64. L. G. F. Waddington (169).

I am informed that Mr P. B. M. Allan's comments were aimed at collectors of numbers of insects who attempt to justify themselves by science, not at entomologists who seek to collect as little and observe as much as possible. I personally know of some entomologists ('scientists' and 'non-scientists') who do indeed collect with a notebook in one hand — this is a very welcome trend amongst our present Juniors, for instance.

With regard to the treatment of contributions for the *Bulletin*, perhaps the analogy that even good food can be spoilt by bad cooking might be suggested. I can assure Members that were editing simply 'parsley arranging' it would not take the amount of time which it does. The inclusion of scientific names is designed to help as many people as possible to use the *Bulletin* to their advantage, the only logical method being (as in Professor Ford's books) to include the full scientific name the first time that a creature is mentioned in an article or chapter. In particular, since so many insects feed on plants, the scientific names of foodplants are helpful to readers. This is one advantage of the correct naming of every plant mentioned.

Would Members prefer the other less conspicuous tasks of editing to go undone, leaving random methods of capitalisation, punctuation, spelling, grammatical construction, giving of references, etc., etc? I do not mind these tasks — or I would not be Editor — yet having limited time I try to give Members an opportunity

to help me if they so wish by providing a list of the standards which I use, as in the February 1964 *Bulletin*. — Editor.

FUNGAL PARASITES OF INSECTS

W. J. Byford, Brooms Barn Experimental Station, Higham, Bury St Edmunds, Suffolk, would be grateful for collections of Entomophthorous fungi attacking aphids. He would also be very pleased to attempt to identify these fungi on other insects. If the diseased insect is not identified, uninfected specimens of the same species would be very useful in enabling this to be done.

Postage would be refunded if required.

NOTES AND OBSERVATIONS

THE OLD LADY MOTH

In the early days of August last year, I found what first appeared to be a large specimen of *Mormo maura* Linn. (Old Lady Moth), in the corner of the front porch. When I examined it more closely, I found it to be no less than five of the above, tightly packed together in a 'V' formation, so as to look like one large moth. Three were females and two were males. I managed to obtain a pairing, and subsequently reared the larvae on hawthorn (*Crataegus* sp.).

Looking there again next morning, I found another two specimens, and during the next week I found one or two every morning. Altogether I found eleven specimens, and they were all in the same corner. It has puzzled me why they always congregated in that particular corner of the porch. Perhaps it was the most sheltered position?

I would like to know if any other

Member has come across a similar phenomenon.

22.3.64. A. G. W. Deacon (3587).

THE CONVULVULUS HAWKMOTH

On 3rd September 1964, a small girl brought me a dilapidated specimen of the *Convolvulus Hawkmoth* (*Herse convolvuli* Linn.) which her brother had caught as it flew at dusk in the village of Kemerton, Gloucestershire.

9.9.64. John Moore (146).

SURVIVAL OF A PARASITIZED ALDER MOTH LARVA

On 4th September 1963, a friend sent me a fully grown larva of the Alder Moth (*Apatele alni* Linn.) from Pembrokeshire. It was found feeding on oak (*Quercus* sp.) in oak coppice woodland. The woodland was on a dry, well-drained slope which faced east. The annual rainfall is forty inches.

I placed the larva in a coffee tin which contained dead grass with oak leaves on top. After eating only a little it began to shrink. After a few days, when it appeared to be almost dead, a parasitic grub began to emerge from under the second segment. Being extremely annoyed at seeing this happen to my first Alder Moth larva, I crushed the grub between my forceps. Later, much to my surprise, the larva pupated successfully. No cocoon was spun, the pupation taking place on top of the grass.

On 19th May this year (1964) a somewhat undersized male Alder Moth successfully emerged.

Has anyone ever known a parasitized larva of any species to successfully complete its life cycle?

8.6.64. Alan P. Waters (2615).

WATCH YOUR KNOTGRASS

Many of you probably use that

ubiquitous little weed Knotgrass (*Polygonum aviculare* agg.) for feeding the less hungry of your caterpillars that feed on nothing more definite than 'low plants'. Before you cast the sprigs into your tins, examine them for more particular insects that feed only on this plant. Keep your eye open especially for reddish or greenish galls about a centimetre long and a few millimetres in diameter on the flowering shoots in August, persisting in the autumn. Each contains a larva of the 'Micro' moth *Augasma aeratellum* Zell. The galls have been recorded only a few times in S.E. England and I am most anxious to learn more about the insect, the habits of which are quite unlike those of any other of our coleophorid moths. These others form portable cases and attack their food from the outside.

5.4.64. R. W. J. Uffen (1660).

A BRIEF NOTE FROM EGYPT

From my schoolboy days, I can remember how Painted Lady Butterflies (*Vanessa cardui* Linn.) would often, when found, seem to be attracted to some particular sunny spot and though disturbed many times would return to the same area.

This habit I saw persisting on 30th April 1964 at the very top of the great pyramid of Cheops at Giza, which is about 450 feet high. The apex is in continual sunshine, of course, from dawn to dusk.

On 27th April 1964 at Aswan, Long-tailed Blues (*Lampides boeticus* Linn.) were flying, and one Milkweed Butterfly (*Danus plexippus* Linn?) was seen: since the latter species is usually reckoned to come from America, I thought this was indeed food for thought. Is there, however, a species in this corner of Africa which could be mistaken for *D. plexippus*?

P. J. Gent (192).

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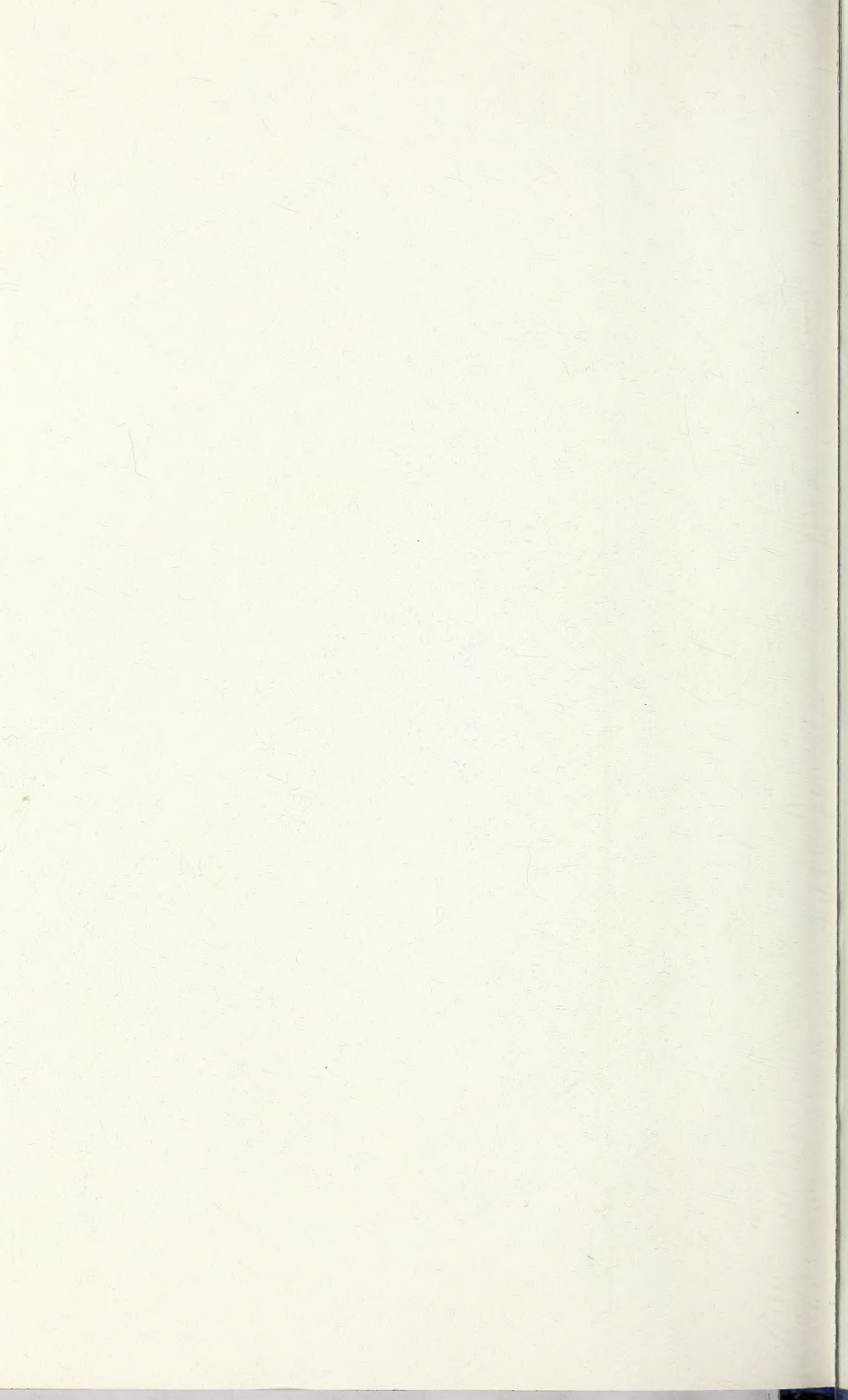
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